

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
AIR TRAFFIC ORGANIZATION: AJW-W13B  
1601 LIND AVE. S.W.  
RENTON, WASHINGTON 98055

## **DENVER FIBER OPTICS CABLE INSTALLATION PROJECT**

### **CONTRACT SPECIFICATION AND DRAWINGS**

**INDOOR/OUTDOOR 96 SM CABLE:  
ATCT - TRACON (TWO PATHS)**

**INDOOR/OUTDOOR 36 SM CABLE:**  
EASTSIDE: ATCT-26 LOC, ATCT-RCF B & ATCT-35L LOC  
WESTSIDE: ATCT-35R LOC, ATCT-16L LOC & ATCT-ASR  
SOUTHSIDE: TRACON - RCF C & TRACON - 17R LOC

**OUTDOOR 36 SM CABLE:**  
RCF A – 17R GLIDE SLOPE

**DENVER INTERNATIONAL AIRPORT**

**May 09, 2011**

## ATTACHMENT A

### DENVER INTERNATIONAL AIRPORT FIBER OPTICS CABLE INSTALLATION PROJECT

#### PROJECT DRAWINGS

<u>DRAWING</u>	<u>TITLE</u>	<u>DATE</u>
NMD-210(16L)-40478-2	Runway 16L Localizer, Plot Plan	03/23/1993
NMD-210(16L)-40478-2F	CAT I Localizer: Floor Plan R/W 16L	07/28/1996
NMD-210(34R)-40478-2D	R/W 34R Localizer, Electrical Details	10/12/1998
NMD-210(34R)-40478-2F	CAT III Localizer, Floor Plan R/W 34R	10/12/1998
DEN-D-ALD-C030	Manhole Layout & Ductbank Distances Overall System	05/11/2010
DEN-D-ALD-C031	Manhole Layout & Ductbank Distances Northeast Quadrant (1 of 4)	05/11/2010
DEN-D-ALD-C032	Manhole Layout & Ductbank Distances Northeast Quadrant (2 of 4)	05/11/2010
DEN-D-ALD-C033	Manhole Layout & Ductbank Distances Northeast Quadrant (3 of 4)	05/11/2010
DEN-D-ALD-C034	Manhole Layout & Ductbank Distances Northeast Quadrant (4 of 4)	05/11/2010

#### REFERENCE DRAWINGS

<u>REFERENCE DRAWING</u>	<u>TITLE</u>	<u>DATE</u>
NMSD-D-MISC-C004	Comm Conduit Trench & Xing Details	06/04/2009
NMSD-D-MISC-C005	Cable J-Boxes at Comm Facility Shelters	09/22/2008
NMSD-D-MISC-C009	Wall Penetration & Cable Tray Detail	05/11/2006
NMD-000-40478-07	DIA Duct: Title Sheet	02/28/1994
NMD-000-40478-13	DIA Duct: Manhole Tabulation	05/11/2010
NMD-000-40478-14	DIA Duct: Precast MH Details, Type A/B	05/30/1994
NMD-000-40478-15	DIA Duct: Cast-in-Place MH Details, Type C	05/30/1994
NMD-000-40478-16	DIA Duct: Miscellaneous Manhole Details	05/30/1994
NMD-000-40478-22	DIA Duct: Duct Bank & Manhole Details, Duct Bank Sections	05/25/1995
NMD-000-40478-23	DIA Duct: Duct Bank & Manhole Details	05/31/1995
NMD-000-40478-24	DIA Duct: Duct Bank Sections	05/25/1995
NMD-000-40478-25	DIA Duct: Duct Bank & Manhole Details	06/01/1995
NMD-000-40478-26	DIA Duct: Duct Bank Sections	05/25/1995
NMD-000-40478-28	DIA Duct: Ductbank & Manhole Details	05/25/1995
NMD-000-40478-29	DIA Duct: Duct bank Sections	05/25/1995
NMD-000-40478-33	ALD: Duct Bank Configuration Fiber Distribution & Details, Sheet 4 of 5	12/03/22008

\*\*\*END\*\*\*

## ATTACHMENT B

### DENVER FIBER OPTICS PROJECT GOVERNMENT FURNISHED MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>COST</u>
<u>FIBER CABLE</u>			
ATCT-TRACON	96 SM I/O Fiber Optics - 1 reel	28,000'	\$46,200
ATCT-TRACON	96 SM I/O Fiber Optics - 1 reel	27,000'	\$44,550
EASTSIDE	36 SM I/O Fiber Optics - 1 reel	34,000'	\$37,400
WESTSIDE:			
ASR - ATCT	36 SM I/O Fiber Optics - 1 reel	24,000'	\$26,400
REST	36 SM I/O Fiber Optics - 1 reel	30,000'	\$33,000
SOUTHSIDE	36 SM I/O Fiber Optics - 1 reel	12,000'	\$13,200
EASTSIDE	36 SM, Outdoor Fiber Optics Cable	5,248'	\$1,250
<u>CABLE LABELS</u>	2X4 Stainless steel tag w/ 2 holes	256	\$1,231

The government furnished materials will be located in the storage yard at the FAA System Support Center in Denver. The address is as follows:

FAA DIA NAV/COM System Service Center  
26705 East 68<sup>th</sup> Avenue  
Denver, Colorado 80249

The contractor shall be responsible for picking up the above materials, transporting them to the job site, unloading and storing them at the job site and for the installation. The contractor shall furnish all other materials. At the end of the work, the contractor shall contact the Contracting Officer's Representative for instructions on either returning any excess government furnished materials back to the Denver SSC office or properly dispose of it off-site. The contractor shall properly dispose of any excess cable reels. Access and delivery dates shall be coordinated with the Contracting Officer's representative.

Before accepting the materials, the contractor shall inventory all materials, visually inspect the materials for defects and perform cable tests as required by the contract. The contractor shall sign acceptance for the materials and be responsible for them until acceptance of the contract work.

The above materials have been inspected, accepted and adequate storage and protection will be maintained.

Received By: \_\_\_\_\_ Date: \_\_\_\_\_  
(contractor)

Witnessed By: \_\_\_\_\_ Date: \_\_\_\_\_  
(contracting officer's representative)

## TABLE OF CONTENTS

### DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01000	GENERAL REQUIREMENTS
SECTION 01015	SECURITY REQUIREMENTS
SECTION 01016	VEHICLE AND EQUIPMENT PERMITTING
PART 20	DENVER MUNICIPAL AIRPORT SYSTEM
	RULES AND REGULATIONS
SECTION 01041	PROJECT COORDINATION
SECTION 01300	SUBMITTALS

### DIVISION 2 - SITE WORK

SECTION 02684	COMMUNICATIONS DUCTBANK
SECTION 02930	SEEDING

DIVISION 3 – CONCRETE	(NOT USED)
DIVISION 4 – MASONRY	(NOT USED)
DIVISION 5 – METALS	(NOT USED)
DIVISION 6 – WOOD AND PLASTICS	(NOT USED)
DIVISION 7 – THERMAL AND MOISTURE PROTECTION	(NOT USED)
DIVISION 8 – DOORS AND WINDOWS	(NOT USED)
DIVISION 9 – FINISHES	(NOT USED)
DIVISION 10 – SPECIALTIES	(NOT USED)
DIVISION 11 – EQUIPMENT	(NOT USED)
DIVISION 12 – FURNISHINGS	(NOT USED)
DIVISION 13 – SPECIAL CONSTRUCTION	(NOT USED)
DIVISION 14 – CONVEYING SYSTEMS	(NOT USED)
DIVISION 15 – MECHANICAL	(NOT USED)

### DIVISION 16 – ELECTRICAL

SECTION 16136	GRS CONDUITS, ENTRIES AND JUNCTION BOXES
SECTION 16181	CABLE INSTALLATION
SECTION 16670	LIGHTNING PROTECTION, BONDING & GROUNDING

\*\*\*\* END OF SECTION \*\*\*\*



## SECTION 01000

### **GENERAL REQUIREMENTS**

#### **PART 1 GENERAL**

- 1.1 Scope of Work - The work covered in these specifications and applicable drawings consist of furnishing all labor, tools equipment, and materials for the installation of fiber optic cables at the Denver International Airport in Denver, Colorado. This work requires coordination with the Federal Aviation Administration-Air Traffic and the City of Denver, Department of Aviation through the Contracting Officer's Representative. Restrictions to work schedules and hours apply for work within the Air Operations Area. The following items are a brief summary of the project and are provided solely for the purpose of revealing the general nature of the work involved. The Contractor is responsible for accomplishing all items of work in accordance with the applicable drawings, specifications and provisions of the contract. Distances and quantities provided represent the best information available and may not be exact. The contractor shall account for minor variations (+/-10%) in his/her bid. Any sundry labor, materials, equipment not specifically detailed or specified, but required to complete the project, shall be provided by the Contractor as an integral part of the scope of work specified.

#### GENERAL REQUIREMENTS:

- A. The contractor shall provide contract compliant submittals of schedule, safety plan, cable installation plan and material product data sheets in a timely manner.
- B. The contractor shall properly coordinate work areas, schedules and runway closures with the Contracting Officer's Representative (COTR) and the City of Denver. The contractor shall not access the airfield without the approval and presence of the COTR.
- C. The contractor shall be fully prepared for all work within runway/taxiway closure areas so as not to cause undue restrictions to aircraft. This includes providing an experienced work crew; reliable and adequately sized equipment; and all needed materials.
- D. The contractor shall provide lights during hours of darkness and other needed equipment such as barricades, cones, etc to accomplish the work.
- E. The contractor shall dewater all vaults and enter each under confined space permit entry requirements. Clean water can be drained on grassy areas provided erosion does not occur. Glycol must be pumped into a tank and then deposited in either a designated drain or the glycol pit. Any other unclean water must be pumped into a tank and disposed of in an approved, wastewater treatment facility.
- F. The contractor shall control erosion. Re-grading and seeding of any disturbed area shall be at the contractor's expense.

### MAJOR WORK ITEMS:

- A) Submittals – provide and obtain approval of all submittals prior to start of work.
- B) Inspect and test with an OTDR two reels of 96 SM, indoor/outdoor fiber optics cable, four reels of 36 SM, indoor/outdoor fiber optics cable and one reel of 36 SM outdoor fiber optics cable prior to pickup and installation.
- C) Construct concrete encased ductbank consisting of two Schedule 40 PVC conduits each with three 1 ¼" innerducts with mule tape. Approximate distance is 40 feet at the 34R Localizer and 80 feet at the 16L Localizer. Construct an approximately 6-foot ductbank consisting of two GRS conduits each with three 1 ¼" innerducts at the 16L Localizer. Approximate required footage of innerduct is 820 feet.
- D) Install one junction box, building entry and associated conduits at the shelter at the following two locations: 1) 34R Localizer and 2) 16L Localizer.
- E) Install risers to match grade on ten vaults.
- F) Install name plates on ten vaults.
- G) Remove existing, abandoned cable and commercially cleanout clogged conduit between vault 206 and 207.
- H) Dewater of approximately 85 vaults prior to entry. Cleanout and ventilate 27 vaults.
- I) Replace approximately 86,563 feet of existing pull tape with mule tape.
- J) Install three 1 ¼" diameter innerducts each with mule tape in one 4" conduit at specified locations. Total estimated amount of 1 ¼" innerduct required was 80,578 feet. Breakdown was estimated as 18,100 feet on Eastside and 62,478 feet on Westside.
- K) Install one 1 ¼" innerduct with mule tape in one conduit of length 50 feet.
- L) Install one to two 1" innerducts with mule tape in 2" conduits. Estimated amount of 1" innerduct required was 412 feet.
- M) Install of two 1 ¼" riser rated innerducts with mule tape between vault 343 and the TRACON electronics room. Estimated amount of riser rated was 300 feet.
- N) Install sixty-seven (67) 12" cable support brackets each with 3" saddle and lock in vaults as specified.
- O) Install thirteen (13) 24" cable support brackets each with 11" arm and lock in vaults as specified.
- P) Install seven (7) 36" cable support brackets and fourteen (14) 3" saddles with locks in vaults as specified.
- Q) Install sixteen (16) 36" cable support brackets each with 11" arm and lock in vaults as specified.
- R) Installation of indoor/outdoor, double jacketed 36 SM fiber optics cable. Estimated breakdown is as follows: 28,158 feet Eastside; 48,867 feet Westside; and 10,356 feet Southside.
- S) Installation of indoor/outdoor, double jacketed 96 SM fiber optic cables in two paths between the ATCT and TRACON. Estimated breakdown is as follows: East Path 22,939 feet and West Path 21,555 feet.
- T) Installation of approximately 3,741 feet of outdoor 36 SM fiber optics cable between 17R GS and RCF A.

- U) Installation of government furnished cable labels – two per cable per vault and one per cable per termini. (approximately 231 required)
- V) Return of re-usable excess materials to FAA, disposal of trash and cleanup.
- W) Final Cable Tests with OTDR.

1.2 Applicable Publications: - The current Federal, Commercial and Trade Association Publications, as listed in the separate sections, form a part of this specification to the extent applicable to the work being specified. Where materials or workmanship are required by this contract to exceed the referenced code or standard, it is the contractor's responsibility to provide materials or workmanship that exceeds the referenced code or standard. Such publications are initially listed by basic designation and subject matter title but will be referred to thereafter in the technical provisions by basic designation only. The federal agencies, Commercial, and Trade Associations referenced in these specifications are as follows.

- A. American Society for Testing and Materials. (ASTM) - Information on obtaining copies of ASTM Standards may be obtained from The American Society for Testing and Materials, 100 Barr Harbor drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel. (610) 832-9585 or [www.astm.org](http://www.astm.org).
- B. Federal Specifications – Copies of Federal Specifications are available for Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, Tel. (877) 413-5184 or [www.global.ihs.com](http://www.global.ihs.com).
- C. Occupational Safety and Health Administration - Information on obtaining copies of OSHA regulations may be obtained from the Government Printing Office, 732 N. Capitol Street NW, Washington D.C. 20401, tel. (202) 512-1800 or on line at [www.OSHA.gov](http://www.OSHA.gov).
- D. National Fire Protection Association (NFPA) - Copies of the National Electrical Code (NEC) and the Lighting Protection Code may be obtained for the National Fire Protection Association, 1 Battery March Park, Quincy, MA 02169-7471, Tel. (617) 770-3000 or [www.nfpa.org](http://www.nfpa.org).
- E. National Electrical Manufactures Associations (NEMA) - Information on obtaining copies of NEMA standards may be obtained from the National Electrical Manufactures Association, 1300 North 17<sup>th</sup> Street, Suite 1752, Rosslyn, Virginia 22209, Tel. (703) 841-3200 or [www.nema.org](http://www.nema.org).
- F. Underwriters' Laboratories, Inc. (UL) - Copies of UL publication may be obtained from Underwriter's Laboratories, Inc., Publications Department, 2600 NW Lake Road, Camas, WA 98607-8542, Tel. (877) 854-3577 or [www.ul.com](http://www.ul.com).
- G. FAA Standards - Copies of FAA Standards can be obtained from the FAA Project Engineer at the Federal Aviation Administration, 1601 Lind Avenue SW., Renton, WA 98055-4056.

- H. Insulated Cable Engineers Associations (ICEA) - Information on obtaining copies of the ICEA publications may be obtained from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, Tel. (800) 854-7179. [www.global.ihs.com](http://www.global.ihs.com) or [www.icea.net](http://www.icea.net).

### 1.3 Safety

- A. Contractor Safety Plan – The Safety Plan shall identify and address those federal and local requirements applicable to the required work. The plan shall describe in detail requirements for working in confined spaces and in chemical environments. The Plan shall include safety policies, methods for accident reporting and prevention, methods for dealing with hazardous chemicals, confined space certifications, hazard identification and safety meetings. No construction shall begin until the Contractor's Safety Plan is completed and submitted (for information only) to the government.
- B. The contractor shall comply with all applicable Federal, State and local safety regulations, and requirements, including but not limited to Occupational Safety and Health Act (OSHA: 29 CFR 1910, 1926 and 1952), NFPA and EPA guidance. The contractor is responsible for ensuring safe and healthful working conditions on site for its employees, sub-contractors, suppliers and any others who may be within the work area. The contractor is required to participate in a pre-construction safety and health review and to complete and sign an Environmental Health and Safety Checklist.

### 1.4 Facility Operation

- A. The existing FAA facilities contain critical FAA equipment used in air traffic control which must remain in service during this project. It is imperative that the Contractor maintain power service and access to these facilities. Additionally, there are restricted areas around the localizers and glide slopes to protect signals to aircraft. It is imperative that the Contractor obtain advanced approval and clearance prior to entering any restricted area. No interruption in service of FAA equipment will be permitted without an approved facility outage.
- B. Unplanned outages, due to construction activities, pose a significant risk to the FAA Air Traffic Control System and to aircraft in flight. Unplanned outages must be avoided.
- C. Cooperate with the FAA to minimize conflict, and to facilitate FAA operations. The contractor shall obtain clearance from the Contracting Officer's Representative (COTR) prior to working near or at existing FAA facilities, as well as prior to entering any existing vaults due to the risks of an accidental outage to existing cables.

- 1.5 Protection of Existing City of Denver and Government Property - The Contractor shall take all precautions necessary to protect the existing facilities, equipment, buildings, vegetation, etc., during construction and hand excavate within four feet of any structure. Any damage done by the Contractor or any subcontractors shall be repaired or replaced by the Contractor at no additional cost. Repairs shall be approved by the Contracting Officer's Representative and shall match the original finish. The Contractor shall provide all temporary covers, enclosures, barricades, etc., required to protect the existing facilities.
- 1.6 Use of Facilities: - Contractor shall provide at his/her expense all necessary water, communications, power and sanitary facilities required for the entire duration of the construction period.
- 1.6.1 Temporary Toilets and Sanitation: - The Contractor shall provide ample and suitable onsite sanitary conveniences with proper enclosures for the use of the workers and other personnel employed at each work location. Such conveniences shall be kept clean, properly ventilated, installed, and maintained in conformity with requirements of all laws and ordinances governing each installation. Sanitary conveniences shall be portable so to stay along side the work area at all times and to be transported off the AOA during non-working hours.
- 1.7 Staging Area - The contractor is responsible for obtaining his/ her own field office. Ample parking for employee's personal vehicles exists outside each airfield gate. Areas near the TRACON may be used for temporary storage if properly coordinated through the Contracting Officer's representative. There are also two areas on the airfield (AOA) that are available for the storage of project-related materials (fiber cable, innerduct, etc.) and equipment (reel trailers, pump truck, etc.). The contractor shall not store any unnecessary item on the AOA and shall remove any item if requested by either the City/County of Denver or the Contracting Officer's representative.
- 1.8 Permits - The Contractor shall be responsible for obtaining any necessary licenses and permits, and for complying with any Federal, State, county and municipal laws, codes and regulations applicable to the performance of this work. The contractor shall have appropriate fire safety measures, such as a fire extinguisher, on site at all times. Smoking is strictly prohibited on airport property.
- 1.9 Insurance and Liability- The contractor shall provide a \$10 million insurance policy as required by the City of Denver and as outlined in the terms and conditions of this contract. The Contractor shall be fully liable to the City of Denver and/or the FAA for any costs or damages imposed upon and/or incurred by the City of Denver and/or FAA as a result of any breach of security or violation of security regulations by the Contractor and/or his employees, agents, subcontractors, suppliers, or other invitees. The Contractor shall defend, indemnify, and hold harmless the City of Denver / FAA against any and all claims of any nature made against the City of Denver /FAA by any party resulting, in whole or in part, from the Contractor's breach of security or security violations.



1.10 Access to Air Operations Area (AOA):

- A. Access to the work site shall be through a security gate manned 24-hours per day by the City of Denver. Once within the airfield area, the Contractor may be required to pass through one or more additional security checkpoints. Valid security badges and appropriate vehicle markings will be verified at each checkpoint. Individual vehicles and/or contents may be subject to inspection. Only vehicles and equipment required for the work will be allowed on the Airfield Operational Area.
- B. For work on the west portion of the airfield, access to the Air Operations Area shall be via Gate 1 on New Castle Street and Gate 2 on East 88<sup>th</sup> Avenue. For work on the east portion of the airfield, access to the Air Operations Area shall be via Gate 4 on Queensberg Street and Gate 7 on East 71st Avenue.
- C. At the beginning of each work shift and prior to entering the airfield, the contractor shall provide the Contracting Officer's Technical Representative (COTR) with a detailed description of the work to be accomplished, including its location and duration.
- D. The contractor must obtain clearance from the Contracting Officer's Technical Representative (COTR) and the City of Denver prior to entering the Air Operations Area (AOA) and prior to beginning work.

1.11 Work on Airports:

- A. The contractor shall comply with all special regulations as required by the City of Denver, Department of Aviation. These regulations are contained in specifications 01015 and 01016 of this contract, along with Denver Municipal Airport System – Rules and Regulations, Part 20. This includes security regulations, badging requirements, insurance requirements, access and driving restrictions, etc.
- B. The contractor shall be familiar with airport regulations and account for all costs necessary to comply with these regulations in his/ her contract bid.
- C. The contractor shall not proceed with any work without the presence of the Contracting Officer's Technical Representative (COTR).
- D. The contractor shall work only in the designated, approved area of the airfield and shall obtain clearance of the work area prior to leaving the airfield.
- E. All equipment and vehicles shall be positioned a minimum of 10 feet away from either side of the perimeter security fence.
- F. Adequate hearing protection (earplugs or earmuffs) shall be furnished by the Contractor for personnel in Air Operations Areas to eliminate the chance of ear damage. There shall be no devices in or on ears other than those used to protect hearing or communicate company business.
- G. Construction equipment that extends 15 feet or more above ground level shall be approved by the City of Denver prior to being moved onto the worksite. If directed by the City of Denver, construction equipment shall be lighted at night and during periods of reduced daytime visibility. Light shall be mounted on highest point of equipment; shall be omni-directional; and shall consist of, as a minimum, one 100-watt bulb enclosed within an aviation red lens. Also, for

- daytime operations, mount an FAA-approved three-foot-square orange and white checkered flag at the high point.
- H. Unless directed otherwise by the COTR or the City of Denver, place lighted barricades around open vaults and around fiber optics cables laid out on the ground. Firmly anchor or weight barricades as required. Additional barricades shall be kept in the staging area to be placed around the project area as directed by the COTR or City of Denver.
  - I. Ensure that the Restricted Area is kept continuously free of construction debris, equipment, and/or materials that might endanger or be ingested by aircraft.
  - J. For emergency purposes, all escort vehicles shall be equipped with radio, telephone, or similar devices for contact by City of Denver security or operations personnel. In the event of an emergency, be prepared to move workers, vehicles, and equipment immediately at the direction of the City of Denver.
  - K. Report emergencies to the Contracting Officer's Technical Representative.
  - L. Ground surfaces disturbed during the installation must be graded to match the surrounding terrain and re-seeded. Grading must be done in a way that no new depressions or impoundments are created.
- 1.12 Cleanup and Waste Disposal – The work site shall be kept clean and orderly during the progress of this project. The Contractor shall collect all waste materials, debris and rubbish and dispose them in an enclosed container in a work vehicle. The contractor shall not allow waste materials or FOD on the Air Operations Area (AOA). All waste materials shall be taken off the AOA and properly disposed of off-site at the end of each work shift. The Contractor shall pay disposal fees and miscellaneous charges. Burning of waste materials is prohibited. The Contractor is responsible for any hazards caused by construction debris.
- 1.13 Contractor's Warranty: - The Contractor shall provide a signed, written warranty that all materials and/or workmanship under this contract are guaranteed against defects or incorrect installation for a period of one (1) year after completion of the work. Repair and/or replacement of any defective materials, improper workmanship, and/or items not in accordance with the plans and specifications shall be at the Contractor's expense.

## **PART 2 MATERIALS**

- 2.1 Contractor Supplied Materials – The Contractor shall furnish all materials not specifically listed as Government Furnished Materials. Materials and equipment supplied must comply with all contract requirements. Any references to brand names within this solicitation are not intended to restrict bidders to these products. Bidders are encouraged to propose equal products made by other manufacturers, which meet the salient characteristic, described herein. Materials furnished by the Contractor shall be new, the standard products of manufacturers regularly engaged in the production of such materials and of the manufacturer's latest designs that comply with specifications. Materials provided shall bear the label of the Underwriter's Laboratory (UL) if those materials are normally evaluated and labeled by UL. Materials are to be installed in accordance with



the manufacturer's recommendations unless specified otherwise.

- 2.2 Government Furnished Materials - The government will furnish the labels for the fiber optic cable. The government will also furnish approximately 55,000 linear feet of 96 SM, indoor/outdoor double jacketed fiber optics cable; approximately 100,000 linear feet of 36 SM, indoor/outdoor double jacketed fiber optics cable and approximately 5,248 feet of 36 SM outdoor single jacketed fiber optics cable. Cable will be on 6-foot diameter reels as follows: a) 96 SM, Indoor/ Outdoor double jacketed fiber optics cable: One (1)- 28,000 foot reel and One (1)- 27,000 foot reel; b) 36 SM, Indoor/Outdoor double jacketed fiber optics cable: One (1) - 34,000 foot reel, One (1) 30,000 foot reel, One (1) 24,000 foot reel, and One (1) 12,000 foot reel; and c) 36 SM, Outdoor single jacketed fiber optics cable: One (1) 5,248 foot reel. The cable will be stored at the FAA DIA NAV/COM SSC office at 26705 East 68<sup>th</sup> Avenue in Denver, Colorado. In the presence of the Contracting Officer's representative, the contractor shall test and inspect the cable for any kinks, defects or damage, and then sign for acceptance of the cable. The contractor shall pick up each reel no sooner than one day prior its installation. The Contractor is responsible for the care of the cable until it is incorporated into the work and accepted by the FAA. The cost of any repairs or replacement due to damages caused by the contractor will deducted from the contract payment.

**\*\*\* END OF SECTION \* \* \***

## SECTION 01015

### SECURITY REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Badges and Permits: DIA requires personnel badging and vehicle permitting administered by the Denver International Airport Security Office. The Contractor shall be required to obtain the proper access authorizations for badges and permits, and the Contractor shall immediately report the presence of unauthorized (unbadged) persons or unauthorized (no permit) vehicles on site to the DIA Project Manager.
- B. Fences: If required, the Contractor shall establish and maintain a secure (fenced) perimeter at its primary operations area to include its field offices, staging and storage areas, and maintenance facilities. The responsibility for security within its operations area shall rest solely with the Contractor. Entrance gates to operations areas shall be equipped with a combination of locks to include a lock provided by the City for its use in accessing emergency equipment, should that need arise. The location, size and other physical characteristics of the Contractor's operations area must be approved by the City prior to its installation.
  - 1. Unless specifically required by the Contract Documents and with the exception of the fenced operations area described above, the Contractor shall install no fences or other physical obstructions on or around the project work area without the written approval of the City.
- C. Trash Dumpsters: To provide maximum security will all construction projects in public areas, all trash dumpsters must have the ability to be covered and locked when not in use.

##### 1.02 VENDORS AND SUPPLIERS

- A. The Contractor shall escort ON A FULL TIME BASIS all unbadged vendors and suppliers requiring access to the restricted areas. Only those vendors and suppliers providing materials and/or supplies shall be allowed on site.

##### 1.03 CONTRACTOR PARTICIPANT MANUAL

- A. Contractors are required to obtain a Contractor Participant Manual from the Airport Security Office and must follow the guidelines in the manual. The Airport Security Plan will be issued after receipt of a \$250.00 refundable deposit. Copies of the Contractor section of the manual are available for review at the Denver International Airport Maintenance and Engineering Office. The Contractor shall comply with DIA policies and TSA regulations.
  - 1. Airport Operations Regulations Part 130 MOVEMENT OF VEHICLES IN RESTRICTED AREAS and Part 20 SECURITY shall be followed. These regulations are available from Airport Operations at Denver International Airport.
  - 2. All work shall be accomplished in accordance with FAA Advisory Circular AC150/5370-2E, "Operational Safety on Airports During Construction", 49 CFR Part 1542 and 14 CFR Part 139 except as modified herein.
  - 3. The following paragraphs supplement, modify, change, delete from or add to FAA AC150/5370-2E. Where any paragraph, subparagraph or clause of the Advisory

Circular is modified or deleted by these supplements, the unaltered provisions of that paragraph, subparagraph or clause shall remain in effect.

4. The Transportation Security Administration requires that all operating airports be secured from the general public and has the authority to issue citations for violations of these requirements. It is the responsibility of the Airport to ensure all fences and gates are secure. If a Contractor's operations necessitate the frequent use of a particular gate, the Contractor shall place a guard at the gate who shall have been trained and certified by Airport Operations to facilitate access to its work. The Contractor assumes full responsibility for maintaining security once this is done. Any fines levied against the Airport as a result of the failure by the Contractor to provide adequate security shall be passed on to the Contractor. A more detailed explanation of security requirements may be found in the Contractor Participant Manual.
5. Contractors will be required at all times to have a supervisor or foreman at each work location in both restricted and non-restricted areas.

**B. Access to Restricted Area via Vehicles**

1. The Contractor shall obtain access to the restricted area via vehicle only when the vehicle displays a Vehicle Permit issued by Airport Security (refer to Technical Specifications Section 01016) and the driver has an Airport ID badge with a driver authorization.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

**3.01 SUBMITTAL FOR BADGES**

- A. Airport identification badges and driver authorization permits shall not be issued prior to Notice to Proceed. The Contractor may at his own risk submit the required information to DIA Maintenance and Engineering Division and to DIA Airport Security prior to Notice to Proceed in order to expedite the badging and permitting process.
- B. By submitting information for personnel badges, the Contractor certifies that the personnel have no disqualifying felony convictions, as defined by Federal Regulations, the employees have valid Colorado driver licenses, and the employees have not previously been required to surrender their badges due to any violations.
- C. Airport ID Badges are obtained as follows:
  1. The Contractor shall designate an Authorizing Agent who is a full time employee of the Contractor and who shall be authorized to sign for the Contractor on all Airport Security applications and forms.
  2. The Contractor shall meet with the DIA Project Manager to review the procedures and required access points at DIA. The Contractor and the Project Manager shall visit the site to verify the access points. Access points shall be listed and submitted by the Contractor to the Project Manager for review and comment prior to Contractor's application for badging.
  3. The Contractor's Authorizing Agent shall schedule a Participant Meeting with the DIA Airport Security Office to review DIA security procedures. A second meeting will be scheduled for the Authorizing Agent to learn how to successfully complete the required

forms for employee badges and vehicle permits.

4. A Criminal History Record Check and Security Threat Assessment (STA) are required for each employee requesting unescorted access to the restricted areas. The employee will complete the Airport Security Badging and Fingerprinting Form (two-sided form) and schedule an appointment with the Airport Security Office to have the form reviewed and to be fingerprinted. The Federal Bureau of Investigation will conduct the Criminal History Records Check and will return the results to the Airport Security Office. (Usually within 3 to 30 business days) The cost of the Criminal History Records Check is \$40.00.
5. When notified by Airport Security that the Criminal History Records Check is completed and cleared, the Contractor shall call to schedule an appointment for employees to come to the Airport Security Office to receive security and driver training. The appointment will take approximately one hour for security training and approximately two hours for security and driver training.
6. All employees will see an interactive security film and must pass a test when they come in for their Airport ID badge appointment. All employees driving on the airfield must also view an interactive driving film and take a second test in addition to receiving airfield driver familiarization training by the Contractor's driver trainer before being allowed to drive on the airfield. Driver familiarization training records must be completed and maintained by the company's authorizing agent.
7. A State Background Check, Identity Verification and Security Threat Assessment (STA) are required for each employee requesting access to the restricted areas. The employee will complete the Airport Security Badging Application along with a residency disclosure and submit the forms to the Airport Security Office to have the background and identity verification conducted. Airport Security will return the results to the Authorizing Agent.
8. **ALL EMPLOYEES ARE REQUIRED TO HAVE EITHER A YELLOW CONTRACTOR BADGE OR GREEN CONTRACTOR ESCORT BADGE.** The Contractor is advised that there is a \$200.00 deposit due for each Airport ID issued for unescorted access (Yellow Contractor badge) in addition to the \$10.00 badge fee. The deposit is refundable but not transferable. The fee for each Airport ID issued for escorted access (Green Contractor Escort badge) is also \$10.00 but there is no deposit required. Rebadging fee for both types of badges is \$10.00.
9. The Airport ID badges must be returned to the Airport Security Office prior to final payment. All Airport ID badges are issued with the expiration date of the project on the badge. Contractors shall notify the Project Manager as soon as possible but in no case less than four weeks in advance of any requirement to extend the duration of badge validations.
10. Total fees for startup:

\$250	Airport Security Plan Deposit
\$ 40	Criminal History Records Check (per employee) for Unescorted access.
\$ 10.00	Colorado State Background & ID Check (per employee) for Escorted access, \$20 per additional state.
\$ 10.00	Badge (per employee)
\$200.00	Refundable badge deposit (per employee) for unescorted access badge.

### 3.02 DUMPSTERS

- A. Security Requirements: The following procedures must be followed to provide maximum security with all construction projects in public areas:

1. Roll-off dumpsters must have the ability to be covered (hard side) and locked when not in use.
2. When unlocked and in use, the Contractor shall provide an employee, or a subcontractor's employee, to stand by the dumpster to prevent unauthorized placement of prohibited items.
3. If the Contractor is not able to have a roll-off dumpster with the ability to be locked, the dumpster shall be removed from the public area when the construction site is inactive.

#### **PART 4 - MEASUREMENT**

##### **4.01 METHOD OF MEASUREMENT**

- A. No separate measurement shall be made for work under this Section.

#### **PART 5 - PAYMENT**

##### **5.01 METHOD OF PAYMENT**

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the applicable unit price item, work order or lump sum bid item.

**END OF SECTION 01015**

## SECTION 01016

### VEHICLE AND EQUIPMENT PERMITTING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. The Contractor shall comply with the Airport Security Plan. Vehicle permits are required for all vehicles operating in the restricted area. Two types of permits are required. The DIA vehicle permit is required for vehicles operating in the restricted area but limited to above grade, outdoor activity. Vehicles or machinery operating within buildings shall be required to acquire a DIA emissions permit as well as a DIA vehicle permit.
- B. Contractors performing work in or through restricted areas are required to obtain a Contractor Participant Manual from the Security Manager and must follow the guidelines in the manual. Copies of the Contractor section of the manual are available for review at the Denver International Airport Operations Office. Contractors shall comply with the DIA Rules and Regulations.
  - 1. Airport Operations Regulations **130 TRAFFIC** and **20 CONDUCT OF PERSONS USING THE DENVER MUNICIPAL AIRPORT SYSTEM** shall be followed. These regulations are available from Airport Operations at Denver International Airport.
  - 2. All work shall be accomplished in accordance with FAA Advisory Circular AC150/5370-2C, "Operational Safety on Airports During Construction", **49 CFR Part 1542** and **14 CFR Part 139**, except as herein modified.
  - 3. The following paragraphs supplement, modify, change, delete from or add to FAA AC150/5370-2C. Where any paragraph, subparagraph or clause of the AC is modified or deleted by these supplements, the unaltered provisions of that paragraph, subparagraph or clause shall remain in effect.
  - 4. Special care shall be exercised by the Contractor when operating within clear zones, under approach and departure zones of runways and in the apron area. The clearance zones shall be considered as extending to a distance of 750 feet laterally from the centerline of runways and to a distance of 193 feet laterally from the centerline of taxiways. Where these zones overlap, the greater distance shall apply. Vertical clearance in the approach and departure zones shall be considered as starting at grade 200 feet beyond the ends of runways and rising at the rate of 50 feet horizontal to one foot vertical.
  - 5. When Work under this contract will take place in the areas listed above, the Contractor must have a radio for communications with Airport Operations. The radio will be assigned after receipt of a \$2,000 deposit. The radio must be with personnel performing work in the airfield operations areas.
  - 6. Access to the runways, taxiways and aprons shall be gained by the Contractor after establishing radio communications with Airport Operations. No personnel or equipment will be allowed on the runways until radio contact has been made with Airport Operations and permission given.
  - 7. Access to airport operations areas will be limited in order to allow the maximum efficient movement of aircraft. As part of this limitation the Contractor may be required to only use these areas late at night when there is less aircraft traffic.



8. Once admitted into the restricted area, the Contractor shall proceed directly to the Work location by way of a route assigned by Airport Security. At no time shall a Contractor or any of its personnel enter onto a taxiway, runway or ramp without proper clearance from the Airport Operations Manager or Assistant Airport Operations Manager. Contractors or individuals violating these requirements for driving in the restricted area may be subject to fines, suspension or permanent revocation of the Airport ID badge and driver authorization.
  9. The Transportation Security Administration requires that all operating airports be secured from the general public and has the authority to issue citations for violations of these requirements. It is the responsibility of the Airport to ensure all fences and gates are secure. If a Contractor's operations necessitate the frequent use of a particular gate, the Contractor shall place a guard at the gate, who shall be trained and certified by the Airport Operations, to facilitate access to its work. The Contractor assumes full responsibility for maintaining security once this is done. Any fines levied against the Airport as a result of the failure by the Contractor to provide adequate security shall be passed on to the Contractor. A more detailed explanation of security requirements is in the Contractor Participant Manual which is available from Airport Operations.
  10. Cranes and Construction Equipment: The Contractor shall provide the necessary drawings and specifications to indicate all information needed by the FAA and the City including but not limited to location of construction activities and height of objects including cranes, construction equipment and vehicles. Drawings shall be scaleable site plans indicating northing and eastings of proposed equipment locations, air space northing and eastings of activity and elevations of equipment based on DIA datum. Specifications shall include standard sheets on equipment specifications and any non-standard modifications to the equipment.
  11. The above information shall be submitted to the Project Manager of COTR for approval five days prior to mobilization. Changes to information submitted shall be re-submitted for approval at least five days prior to mobilization of any change.
  12. If required by DIA, standard DIA-approved warning lights and flagging will be required on any temporary equipment or structures.
  13. Lighting of the work area is subject to approval by DIA Operations and DIA Planning and Development. The Contractor shall include in item (10) above information on any site lighting proposed by the Contractor. The locations, heights and types of luminaries shall be submitted. The Contractor shall conduct his activities, especially lighting, so as not to interfere with Airport and FAA operations.
- C. General safety regulations when in aircraft operations areas may include the following:
1. At all times, the Contractor shall coordinate its work with the requirements of the Airport site and operations. All work, movement of men, materials, supplies and equipment in areas used by aircraft shall be subject to regulations and restrictions established by the City. The Contractor shall take special precautions and be fully responsible for the prevention of damage to materials and equipment in the areas affected by the jet blast of taxiing aircraft. No work shall proceed until necessary protective devices are placed as required to protect the public, airport operations, property and personnel from the hazards of the Work. The Contractor shall proceed with his work, including temporary work and storage of tools, machinery and materials, to cause no interference with or hazards to the operation of the Airport.
  2. Landings, takeoffs and taxiing shall take precedence over all Contractor's operations. In the event that the Contractor is notified that an emergency landing or a takeoff is imminent, the Contractor shall stop all operations immediately, regardless of the



sequence of events in progress and shall immediately evacuate his personnel and equipment from the runway and taxiway areas as directed.

3. The Contractor shall remove its personnel and equipment to the distance specified below for the prevailing conditions:
  - a. For emergencies the Contractor shall move all personnel and equipment as directed by Airport Operations or the Project Manager.
  - b. At the end of a work day in areas where aircraft are operating, all equipment shall be moved to a location that is not less than 750 lineal feet measured from the near edge of the runway, taxiway or ramp area or to the location designated by the City.
4. If the Contractor is asked to leave part of its worksite to allow aircraft operation, the Contractor shall clean the area to allow safe aircraft movement. Cleaning may include sweeping the area to prevent damage to aircraft.

D. Vehicle Permitting

1. Vehicle permits are limited to those vehicles and or equipment required for completion of the work. Employee vehicles will not be issued permits. No Contractor employee parking will be acceptable in the Restricted Area.
2. The Contractor shall obtain access to the restricted area only when the vehicle displays a Contractor permit and the driver has an Airport ID badge with a driver authorization. Vehicle permits may be obtained as follows:
  - a. Contractor vehicle permits cost \$105.00 dollars, of which \$100.00 dollars is a deposit refunded at completion of work and after the permit is returned to Airport Security. Vehicle permits must be surrendered before final payment will be made for work accomplished. A Vehicle Permit Application must be filled out and approved by the Project Manager prior to the issuance of the permit. The Contractor's Security Coordinator must file a sponsorship form with DIA Access Services and accompany any subcontractor requesting a vehicle permit. The approved vehicle application must be presented at Airport Security to obtain the vehicle permit.
  - b. All vehicles that are not permitted by Airport Operations to drive in the restricted area are required to be escorted. All vehicles that are escorted must have a minimum of \$1,000,000.00 combined single limit coverage with a 30 day notice of cancellation to Airport Operations. All unescorted vehicles must have \$10,000,000.00 combined single limit coverage with a 30-day notice of cancellation to Airport Operations prior to any permits being issued.
  - c. Contractor permits are issued with the expiration date of the project on the permit. A \$5 fee will be charged for a new permit that requires an extension of time.
  - d. The Contractor must have a four-inch letter company logo on each side of the vehicle, or the Contractor shall obtain an orange and white checkered flag. The cost of the flag is \$30.00, and may be obtained at Access Services. All vehicles operating in the restricted area must display the logo or the flag at all times. Contractors may use old flags in good condition.
  - e. The Contractor shall obtain a driver authorization for all operators of vehicles in the restricted area. Reference Technical Specifications Section 01015.
  - f. Contractors will be required to have a supervisor or foreman at each work location at all times.

E. Equipment Permitting

1. Fossil fuel powered equipment to be used in the interior of buildings and/or in

basement/tunnel areas shall require inspection by DIA Maintenance and the Denver Fire Department. **Only CNG fossil fuel powered equipment may be used; gasoline powered, propane powered, or diesel powered equipment will not be acceptable unless identified and operated per Specifications Section 01014.**

## **PART 2 - PRODUCTS (NOT USED)**

## **PART 3 - EXECUTION**

### **3.01 PERMITS**

- A. Vehicle permits shall not be issued prior to Notice to Proceed. The Contractor may, at his own risk, submit required information prior to Notice to Proceed to the following:
  - 1. Vehicle permit: DIA Engineering Group or DIA Airport Security
  - 2. Equipment and vehicle emissions permit: DIA Engineering or DIA Maintenance Group.

### **3.02 SCHEDULE**

- A. The Contractor shall allow in his schedule five days for DIA review of submittals for permits. Testing of equipment and review by the Denver Fire Department shall be scheduled by the Contractor. By submitting information for permits, the Contractor certifies that equipment and vehicles comply with all city, state and federal regulations including but not limited to emissions, licensing and safety requirements.

## **PART 4 - MEASUREMENT**

### **4.01 METHOD OF MEASUREMENT**

- A. No separate measurement shall be made for work under this Section.

## **PART 5 - PAYMENT**

### **5.01 METHOD OF PAYMENT**

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the applicable unit price item, work order or lump sum bid item. All permits shall be returned to the City prior to the Contractor submittal for Final Settlement, Termination, and/or upon written request from the Project Manager.

**END OF SECTION 01016**



# Denver Municipal Airport System

## Rules and Regulations

### Part 20

Revision: 02/20/09

## **20 AIRPORT SECURITY RULES AND REGULATIONS**

The Rules and Regulations in this Section 20 are adopted by the Manager of Aviation ("the Manager"), pursuant to the Manager's authority under Article II, Part 11 of the Charter of the City and County of Denver, Chapter 5 of the Denver Revised Municipal Code, and Title 41, Art. 4, Colorado Revised Statutes, in support of the Airport Security Program and to protect the safety of the traveling public consistent with the federal Transportation Security Administration (TSA) regulations, including 49 CFR Part 1540, 1542, 1544 et seq., and other applicable federal laws.

### **20.01 Participant Status**

Each Air Carrier, Tenant, Vendor, Ground Transportation (GT) Vendor Contractor (or Subcontractor) requiring access to the Restricted Area, Sterile Area, or Secured Area shall become a "**Participant**" in the Airport Security Program, and remain in good standing in order to retain Airport Security privileges.

### **20.02 Participant Sponsorship**

Any Vendor, GT Vendor or Contractor (including Subcontractors) requiring access to the Restricted Area, Sterile Area, or Secured Area must be sponsored by the City & County of Denver (CCD) Department of Aviation, an Air Carrier or Tenant. The sponsorship establishes that a Vendor, GT Vendor, or Contractor (including Subcontractors) has legitimate business at the Airport. All construction contractors must submit the Participant Sponsorship form signed by their sponsor and by Airport Maintenance and/or Engineering. A company sponsoring a Participant shall immediately notify Airport Security when any sponsorship is terminated.

### **20.03 Authorizing Agent Responsibilities**

**20.03-1** Each Participant shall designate an Authorizing Agent to ensure the Participant's compliance with the Airport Security Program and act as the point of contact between the Participant and Airport Security. The Authorizing Agent shall be designated in writing to Airport Security by the Participant.

**20.03-2** All Authorizing Agent signatures submitted to Airport Security must be original and authentic. Stamped, photocopy, or facsimile signatures will not be accepted.

**20.03-3** The Authorizing Agent is the primary point of contact for Airport Security, and is responsible for signing all fingerprint and security badge applications, processing state background checks, identity verification, Airport ID Badges, Vehicle Permits, Access Changes, Access Control reporting, Driving Privileges, Violation Notice distribution, providing updated current contact information for the company as well as for the Authorizing Agents and any other business relating to Airport Security.

**20.03-4** Each individual designated by a Participant as an Authorizing Agent must successfully complete the following requirements in order to initially qualify, and to maintain qualification, as an Authorizing Agent:

- (a) Attend an Authorizing Agent training class every year.

(b) Maintain an active Airport ID badge at all times.

(c) Have an Authorizing Agent Designation form signed by a senior company manager and approved by the Director of Airport Security or designee.

**20.03-5** Every Authorizing Agent is required to know the policies and procedures outlined in the following sections of their company's Airport Security Program:

(a) AIRPORT ID BADGES (Colors and types of approved access control media)

(b) BACKGROUND REQUIREMENTS (fingerprinting or state background check and Security Threat Assessments)

(c) AIRPORT ID BADGE TRAINING

(d) VEHICLE PERMITS (Insurance Requirements and types of permits)

(e) DRIVER AUTHORIZATION TRAINING

(f) VENDOR PROCEDURES

(g) CONTRACTOR PROCEDURES

(h) AUDIT PROCEDURES

(i) VIOLATION NOTICE PROCEDURES AND RESPONSE BY SUPERVISORY PERSONNEL

(j) ACCESS CONTROL POINTS (Adding access and deleting access from personnel)

#### **20.04 Entry into Restricted Area**

Only individuals who are properly badged or escorted in accordance with the provisions of this Section 20 and applicable federal, state and city laws and regulations shall enter the Restricted Area as necessary in the conduct of flights, inspections or in the course of other official duties.

##### **20.04-1 Approved Identification Media for Access to Restricted Area**

Individuals with unescorted access entering the Restricted Area shall display Airport approved identification at all times. The following identification is approved as Airport authorized identification in the Restricted Area, and NO OTHER FORMS OF IDENTIFICATION ARE AUTHORIZED:

(a) An appropriate Airport ID Badge, as described in this Section, issued by Airport Security.

(b) Federal Aviation Administration (FAA) Flight Standards Inspector Identification (110A). The FAA Form 110A does not provide access; it only affords unescorted movement once access has been achieved by other legitimate means.

(c) Current and valid Aircraft Operator Media (company-issued picture identification badge), worn by uniformed flight crews in the immediate vicinity of their aircraft or directly enroute to or from their aircraft. Flight crews must access their aircraft through company leased areas. Flight crew members are not allowed escort privileges using company issued identification badges.

(d) A current and valid FAA Airmen Certificate (Pilot's License) along with a picture identification, (e.g., a driver's license), in the possession of a general aviation pilot in the immediate vicinity of his or her aircraft or enroute between aircraft parking and the General Aviation Ramp or Cargo Terminal. The access permitted under this category of identification is for licensed pilots who may pre-flight, load, unload or conduct maintenance of their aircraft, or who may transit directly between their aircraft and the General Aviation Ramp or Cargo terminal by the shortest safe route. The general aviation pilot is responsible for the control of his or her passengers while they are within the Restricted Area.

(e) Official Transportation Security Administration (TSA) credentials. Only TSA Management and Regulatory Inspectors are credentialed.

(f) Current, valid, and appropriate military identification, carried by military flight crews and military couriers enroute to or from their aircraft.

(g) Secret Service credentials. Approved for use during United States Secret Service operations in areas designated by Airport Operations and includes escort privileges.

(h) Identification meeting the requirements contained in the Airport Emergency Plan, carried by personnel responding to an emergency in the Restricted Area.

#### **20.04-2 Approved Identification for Access to the Sterile Area**

Individuals with unescorted access entering the Sterile Area shall display Airport approved identification at all times. The following identification is approved as Airport authorized identification in the Sterile Area, and NO OTHER FORMS OF IDENTIFICATION ARE AUTHORIZED:

(a) An appropriate Airport Identification Badge as described in this Section issued by Airport Security.

(b) Federal Aviation Administration (FAA) Flight Standards Inspector identification (110A).

(c) Current and valid Aircraft Operator Media (company-issued picture identification badge), worn by uniformed or non-uniformed flight crews. Flight crew members are not allowed escort privileges using company-issued identification badges.



(d) Official Transportation Security Administration (TSA) and Federal Aviation Administration (FAA) credentials. Only TSA Management and Regulatory Inspectors are credentialed.

#### **20.04-3 Airport Identification Badges: Classes and Access Areas**

All individuals employed at the Airport with Restricted Area access, or working in the Terminal, Concourses, or Parking and Ground Transportation facilities, must obtain an Airport Identification (ID) Badge. Airport ID Badges will be issued by Airport Security and if deemed necessary by Airport Security, may require a deposit. All such identification badges shall be and remain the property of the Airport. The Airport ID Badge must be surrendered on demand to Airport Operations and/or a Contract Security Guard. An individual employed by more than one company, or changing employers, must obtain an Airport ID Badge for each company. Badge Color indicates general areas of authorization in relationship with direct support of an individual's job function. Badge Color does not determine access. The respective classes of Airport ID Badges, indicated by badge color, are described below.

**(a) RED:**

Authorized for all areas of the Airport including runways and taxiways in direct support of the job function

Issued subject to the approval of the Assistant Deputy Manager of Aviation/Operations (CAOM) and/or designee.

Includes escort privileges.

Expires every year on the individual's birthday.

**(b) RED STRIPE:**

Authorized for all areas of the Airport, including runways and taxiways in direct support of the job function, with prior authorization from Airport Operations and the FAA Control Tower.

Issued subject to the approval of the Assistant Deputy Manager of Aviation/Operations (CAOM) and/or designee.

Includes escort privileges.

Expires every year on the individual's birthday.

Note: Red Stripe badges issued to contractor employees will expire on the individual's birthday and not on the Company's Sponsorship expiration date.



(c) BLUE:

Authorized for all Non-Movement Areas in direct support of the job function.

Includes escort privileges.

Expires every year on the individual's birthday.

(d) GREEN:

Authorized for buildings and predetermined vehicle routes in the Restricted Area.

Vendor Badge.

No escort privileges.

Expires on the earlier of sponsorship expiration, vehicle insurance expiration, or at the determination of Airport Security Management but will never exceed one year from date of issuance.

(e) WHITE:

Authorized for buildings (loading bridges, baggage and train tunnels) and the Restricted Area between the building and the outer vehicle service road or aircraft parking areas to include the General Aviation and cargo areas in direct support of the job function.

Includes escort privileges.

Expires every year on the individual's birthday.

(f) YELLOW:

Authorized for buildings and predetermined vehicle routes in the Restricted Area in direct support of the job function.

Contractor badge.

Includes escort privileges.

Expires on the earlier of sponsorship expiration, vehicle insurance expiration, or at the determination of Airport Security Management but will never exceed one year from date of issuance.

(g) BROWN:

Authorized for driving access to the Ground Transportation (GT) Level (Level 5) of Denver International Airport.

Note: Employees of GT companies working in the terminal must obtain a White badge.

Issued to drivers of Ground Transportation Companies operating at Denver International Airport.

No Sterile or Restricted Area access.

No escort privileges.

Expires on the earlier of two years from date of issue or upon termination of sponsorship.

(h) PINK:

Authorized by Airport Security based on pre-approved "demonstrated need" ONLY.

Restricted Area: Allows "Escorted" access (by a current Airport ID Badge holder in accordance with this Section 20) in the Restricted Area for official airport business.

Sterile Area: Allows "Unescorted" access in the Sterile Area for official airport business, once the individual has completed the screening process through a TSA certified screening checkpoint.

Issued by Airport Security personnel or contract security guard personnel in the Airport Office Building reception area. Date of Birth, Full Legal Name (First & Last) and Government issued ID (i.e. driver's license or Passport) is recorded into the Security Visitor badge database. Individual data is compared to the most current TSA No-Fly List and TSA Selectee List.

Requires that the wearer present a valid government-issued picture ID at issue, and carry such an ID while wearing the badge.

Badge expires daily and individual is limited to three (3) separate issuances. Requests for additional issuances above three (3) times must be approved by the Director/Assistant Director of Security or the Airport Security Coordinator (ASC) on duty.

(i) GREEN CONTRACTOR "ESCORT-REQUIRED" BADGE:

Authorized for buildings and predetermined areas only when escorted in accordance with this Section 20.

Issued only to Contractor employees by Airport Security

No escort privileges.

Expires on the earlier of sponsorship expiration, vehicle insurance expiration, or at the determination of Airport Security Management but will never exceed one year from date of issuance.

#### **20.04-4 Application for an Unescorted Access Airport ID Badge**

The following must be accomplished in order for an individual to be issued Airport ID Badges granting unescorted access to Restricted and/or Sterile Areas (Red, Red Stripe, Blue, Green, White, and Yellow Badges):

(a) The individual must complete an application, on a form prepared and currently approved by Airport Security. Two valid forms of identification must be presented with the application, one of which must be a government-issued photo identification. The second form of identification must verify proof of citizenship (i.e., birth certificate or legal residency with work authorization). All information regarding the individual's name, age, gender, and other vital statistics on both forms of identification must be consistent and verifiable

PASSPORT

(b) An Authorizing Agent of the individual's employer or the sponsoring tenant must complete a Criminal History Record Check (CHRC) and a Security Threat Assessment (STA) request on each individual who has applied for clearance for unescorted access to the Restricted Area, and sign the application form indicating that the applicant is not considered a security risk.

- i) The application must be signed by the Authorizing Agent after the employee has completed the employee section and the backside of the application
- ii) The application must be signed by the Authorizing Agent after the employee has completed the Employee Sections and no more than thirty (30) calendar days before the employee presents the application. All Authorizing Agent signatures must be authentic. Stamped, photocopy, or facsimile signatures will not be accepted.
- iii) An Authorizing Agent who signs an Airport Security Application before the Employee Sections have been completed, or if an application is lost and it is not reported to Airport Security, may have his or her Authorizing Agent privileges revoked, and Airport ID Badge may be suspended.

(c) If the individual's employer is sponsored by an air carrier under 49 CFR Part 1544, a Fingerprint Certification Form must be signed by the sponsoring air carrier and submitted with the application.

(d) The individual must view a training film on Denver Municipal Airport System Rules and Regulations, as they pertain to overall security, and pass a corresponding test to assure understanding of the Rules and Regulations. If the individual will have Driver Authorization, a valid driver's license must be presented. Under state law,

C.R.S. 42-2-104, all Colorado residents are required to obtain a Colorado driver's license within thirty (30) calendar days of residency.

(c) The individual will be given a copy of the Airport Rules and Regulations, Section 20, and in the presence of an Airport Security representative, sign the application form indicating:

- i) The individual has viewed the Security training film.
- ii) The individual fully understands and has received a copy and/or website link of Airport Rules and Regulations, Section 20.
- iii) The individual understands, acknowledges, agrees and consents that violations of the security regulations listed in Section .04-16, due to the critical nature of these offenses which affect the overall safety and security of Airport employees and the traveling public, are reason for immediate confiscation and suspension (and possible permanent revocation) of the Airport ID Badge and may result in a Denver Police Department (DPD) Municipal Citation.
- iv) The individual acknowledges that all Airport ID Badge applicants may be subject to future background investigations by Federal, State or other local judicial or law enforcement agencies.
- v) The individual understands that recurrent violations of Denver Municipal Airport System Security Rules and Regulations of a less critical nature will be administered by Section 20.
- vi) The individual understands and acknowledges personal responsibility for all violations or fines incurred as a result of his or her own acts or omissions.
- vii) An individual, Participant, or Authorizing Agent caught cheating or falsifying any Airport Security document or training may be subject to a Violation Notice and/or a Federal Civil Penalty and/or denial, suspension, or revocation of their Airport ID Badge.

#### **20.04-5 Airport ID Badge Revalidation.**

- (a) Airport ID Badges expire on the date printed on the front of the badge.
- (b) The Airport ID Badge may be revalidated up to thirty (30) calendar days prior to the expiration date.
- (c) If a 49 C.F.R. Part 1542 Airport ID Badge is suspended because it has expired, the following rules apply.
  - i.) If the employee has cleared a fingerprint-based CHRC and the badge has been expired less than thirty (30) calendar days, a letter, signed by

the employee's Authorizing Agent, must be submitted to Airport Security prior to badge reissuance. The letter must be on company letterhead and have the employee's name, badge number, date of hire, and indicate that the employee has been continuously employed since the badge expired.

- ii.) If a badge is suspended because it has expired for more than thirty (30) calendar days, the employee must be fingerprinted and clear a CHRC and STA before the badge can be reissued.

(d) If a 49 C.F.R. Part 1544 Airport ID Badge is suspended because it has expired, the following rules apply.

- i) If the employee has cleared a fingerprint based CHRC, STA and has been continuously employed, an Airport Security Application signed by the air carrier Authorizing Agent must be submitted with the Airport Security Application at the time of reissuance.
- ii) For Airport ID Badges issued under both 49 C.F.R. 1542 and 1544, if the employee has not been fingerprinted or has not been continuously employed, the employee must be fingerprinted and clear a CHRC before the badge can be reissued.

#### **20.04-6 Criminal History Record Check (CHRC) & Security Threat Assessments (STA)**

(a) Any person requesting or requiring a badge that would permit unescorted access to the Sterile and/or Restricted Areas must be fingerprinted and pass a CHRC and STA. Passing a CHRC means the employee shall not have been convicted, or found not guilty by reason of insanity, or arrested for any of the disqualifying crimes and awaiting judicial proceedings of any of the felony crimes listed in 49 C.F.R. 1542.209.

(b) All applicants for Airport ID Badges must complete the badging process within thirty (30) calendar days of clearing their CHRC and STA.

(c) Any individual possessing an Airport ID Badge must report to his or her supervisor or Authorizing Agent, within twenty-four (24) hours, if he or she is convicted, or found not guilty by reason of insanity, or arrested for any of the disqualifying crimes and awaiting judicial proceedings of any felony crimes listed in 49 C.F.R. 1542.209.

(d) Upon being informed of his or her employee's conviction, or a finding of not guilty by reason of insanity of any of the felony crimes listed in 49 C.F.R. 1542.209, the employee's supervisor or Authorizing Agent must contact Airport Security within twenty-four (24) hours to suspend the individual's Airport ID Badge.

#### **20.04-7 Application for a Ground Transportation Airport ID Badge**

The following must be accomplished in order for an individual to be issued an Airport ID Badge granting unescorted operation of a motor vehicle on level 5 of the Main Terminal (Brown Badge):

(a) The individual must complete an application, on a form prepared and currently approved by Airport Security. This form must be signed by the applicant's Authorizing Agent and presented with two valid forms of identification, one of which must be government-issued photo identification. The second form of Identification must prove proof of citizenship or legal residency with work authorization (i.e., birth certificate, passport, etc.).

(b) The individual must complete a Residency Disclosure Form if the individual has not lived in the state of Colorado for the past five (5) years. The individual must clear a five (5) year Colorado Bureau of Investigation ("CBI") check and/or other State Bureau Investigation Check for each state in which the individual has resided in. Passing a Colorado and/or other state check means the employee shall not have been convicted, or found not guilty by reason of insanity, of any of the felony crimes listed in 49 C.F.R. 1542.209. If the applicant has not lived in Colorado for at least five (5) years preceding the date of his or her application for a badge, a check equivalent to the CBI check will be conducted on each state of the applicant's residency within five years of the date of his or her application for a badge.

(c) All applicants must complete the badging process within thirty (30) calendar days of clearing a Colorado and/or other state check.

(d) Any individual possessing an Airport ID Badge must report to his or her supervisor or Authorizing Agent, within twenty-four (24) hours, if he or she is convicted, or found not guilty by reason of insanity, or arrested for any of the disqualifying crimes and awaiting judicial proceedings of any felony crimes listed in 49 C.F.R. 1542.209.

(e) Upon being informed of his or her employee's conviction, or a finding of not guilty by reason of insanity of any of the felony crimes listed in 49 C.F.R. 1542.209, the employee's supervisor or Authorizing Agent must contact Airport Security within twenty-four (24) hours to suspend the individual's Airport ID Badge.

#### **20.04-8 Violation Notice Program and Appeals Process**

(a) Violations of Security Advisories, Denver Municipal Airport System Rules and Regulations, the Manager's Directives, and DIA Standard Policies and Procedures regarding Airport Safety, Security, and Operations can be issued by the Manager of Aviation, Deputy Manager of Aviation - Operations, Assistant Deputy Manager of Aviation - Aviation Operations Manager, Assistant Aviation Operations Manager, Director of Security and his or her staff, Airport Operations Representative Supervisors and their staff, City Contract Security Guards and Denver Police Department (DPD) officers assigned to Denver International Airport. Each



individual who is issued an Airport ID Badge shall comply with all Security Advisories, Denver Municipal Airport System Rules and Regulations, the Manager's Directives, and DIA Standard Policies and Procedures regarding Airport Safety, Security, and Operations. The failure of any individual to comply with such Security Advisories, rules and directives will result in the issuance of a Violation Notice and may result in the assessment of a Federal Civil Penalty and/or the denial, suspension, or revocation of Airport ID Badges.

(b) The Violation Notice is a three part form:

- i.) Pink is given to the offender who is required to the Violation to his or her supervisor. The pink copy under certain circumstances may be sent with the white original. The two other copies are sent to the Assistant Director of Security or designee by the issuing agent.
- ii.) The Assistant Director of Security or designee sends the white original to the Authorizing Agent of the company for their follow up. A letter will be included informing the Authorizing Agent and the severity of the Violation and the possible consequences of the offender if they receive another Violation Notice in the future.
- iii.) The file copy is reviewed by the Assistant Director of Security or designee, and pertinent information is entered into the Violation Notice computer database.
- iv.) The Air Carrier, Tenant, Contractor, GT Vendor, Vendor or City Authorizing Agent must ensure that appropriate action is administered against the offender, complete the "Action Taken" section on the white copy and return it to the Assistant Director of Security or designee within ten (10) business days. If the prescribed time frame is not met, the individual who received the Violation may have his or her Airport ID badge suspended until a response is received.

(c) The City and County of Denver reserves the right to deny or to revoke an Airport ID Badge based upon reasonable grounds after giving due consideration to the sensitivity of the level of access and the areas to which the individual has actual access and the nature of the offense which forms the basis of the denial or revocation. Violations severe enough to require revocation under this section include, but are not limited to, those described in 20.04-16.

(d) When the holder of an Airport ID Badge is issued a Violation Notice of a less than critical nature, he or she may, within ten (10) business days thereafter, request a meeting with the Assistant Director of Security or designee, to review the facts giving rise to the Violation Notice. If such meeting is not requested, the Violation Notice will become final, and the badge holder will have waived all rights to review or appeal thereof. If such a meeting is timely requested, the Assistant Director of Security or designee shall conduct an informal meeting with the person who was



issued the Violation Notice. At such meeting, the Assistant Director of Security or designee shall give such person the opportunity to present facts and arguments, if any, as to why the Violation Notice was not properly issued, and shall consider the facts in support of the Violation Notice. The Assistant Director of Security or designee shall then decide whether the Violation Notice should be withdrawn. If the Violation Notice is withdrawn, such fact may be communicated orally to the person to whom it was issued. If the Violation Notice is not withdrawn and/or not appealed in a timely fashion, the violation will be considered valid and entered into the Violation Notice data base.

(c) When the holder of an Airport ID Badge is issued a second Violation Notice which is substantively the same as another Violation issued to the same individual within a two (2) year period, a Violation Notice Hearing will be conducted by the Assistant Director of Security or designee. A pre-Hearing letter will be sent via email and/or U.S. Mail informing the Authorizing Agent that a Hearing needs to be scheduled with Airport Security within ten (10) business days and that a management representative of the company/department must attend along with the employee. If the prescribed time frame is not met, the individual who received the Violation may have his or her Airport ID badge suspended until a Hearing takes place. If, following this Hearing, the Assistant Director of Security or designee determines that the violation is valid, the Assistant Director of Security or designee shall communicate his or her decision in writing to the individual who was issued the Notice, stating any violations which the Assistant Director of Security or designee reasonably believes were committed by such individual and the consequences for such violations. Such decision (except a decision to withdraw a Violation Notice) may be appealed as detailed in 20.04-8 (g).

(f) A third Violation in the same category by a company may result in the suspension of badging privileges until the manager of the violating company provides proof to the Directory or Assistant Director of Security that the Violation will not occur again.

(g) If an application for an Airport ID Badge is denied or an Airport ID Badge is suspended or revoked, the individual who has been denied a badge or who has had his or her badge suspended or revoked during a Violation Notice Hearing may request an administrative hearing by contacting the Director of Security who will serve as the Appeals Officer within thirty (30) calendar days after the date of such denial or revocation. The hearing shall be conducted as expeditiously as possible, and in accordance with any rules adopted by the Appeals Officer for such proceedings. Evidence shall be submitted under oath or affirmation. The petitioner shall bear the risk of non-persuasion, and the standard of proof shall conform with that in civil non-jury cases in Colorado State District Courts. The Appeals Officer shall thereafter make a final determination as to the action being appealed. Such final determination may be reviewed under Rule 106(a)(4) of the Colorado Rules of Civil Procedure. A request for reconsideration of the determination may be made if filed with the Deputy Manager of Aviation/Operations within fifteen (15) calendar days of the date of determination, in which case the Deputy Manager of Aviation/Operations shall review the record, and the determination shall be considered a final order of the

Deputy Manager of Aviation/Operations on behalf of the Manager of Aviation upon the date when the Manager rules on the request for reconsideration.

(h) An employee requesting an Airport ID Badge must resolve all pending or valid violations before being allowed to proceed in the badging process. If the employee no longer works for the company and is attempting to be employed by a different company, a management representative from the "new" company must attend the Violation Notice Hearing along with the employee.

#### **20.04-9 Airport Security Program**

(a) No participant of the Airport Security Program shall divulge the Airport Security Program or sections thereof to any individual, unless the individual has a specific and valid need to know such information, as identified and defined in the federal government's Transportation Security Regulations and (TSA) 49 C.F.R. Parts 15 and 1520.

(b) There is a refundable deposit for each Airport Security Program/Participant Manual issued to Tenants, Air Carriers, Vendors, Contractors or GT Vendors.

(c) There may be a fee charged to any company to replace a lost Airport Security Program/Participant Manual.

#### **20.04-10 Termination of Employees; Return of Badges and Security Keys Issued by Airport Security**

(a) It is the responsibility of the employer of any person to whom an Airport ID Badge or Security keys has been issued to immediately notify Airport Security when an employee is separated from the company for any reason for more than thirty (30) calendar days, or loses his or her Airport ID Badge or Security Keys.

(b) All Airport ID Badges and Security Keys shall be surrendered to Airport Security within ten (10) business days when any employee or other individual required to have such identification badge: terminates employment; is transferred to another location; or when the project or contract under which that individual is working is completed or terminated.

(c) A fee for costs shall be assessed against the employer who fails to return the Airport ID Badge within thirty (30) calendar days upon the termination of the individual's employment, transfer, or completion of the project or contract.

(d) If a badge is terminated and not surrendered to Airport Security under .04-10(b), all other badges issued to that individual may be suspended and no additional badges issued to that individual until the terminated badge is returned to Airport Security.

#### **20.04-11 Fees for Airport ID Badges**

There shall be a fee to cover the administrative cost of producing the Airport ID Badge. An additional fee may be requested to cover the administrative cost of processing a lost badge.

#### **20.04-12 Display and Care of Airport ID Badge and Access Pin & Cipher Code Numbers**

(a) All individuals in the Restricted Area and any other area where an Airport ID Badge is required must display on their person at all times their Airport ID Badge or other approved identification as defined in these rules. The Airport ID Badge or other approved identification shall be worn on the front upper half of the body so that the picture is visible and not covered with other identification.

(b) With the intent of preventing unauthorized use of Airport ID Badges, all individuals to whom such a badge has been issued shall store their badge in a secure place in their possession and under their control at all times.

(c) Badge holders will not subject their Airport ID Badge to extreme environmental elements.

(d) Any individual who is issued Access Pin and/or cipher code number(s) will ensure that it is kept in his or her immediate control to prevent unauthorized use of the Access Pin number and will ensure his or her Access Pin and/or cipher code number(s) is never stored in close proximity to his or her Airport ID Badge.

(e) Each individual will be allowed up to three (3) replacement Airport ID badges if the badge has been lost or stolen with an increasing replacement cost for each. A subsequent request for a replacement badge beyond three (3) will require the individual and a management representative of the company to have a Hearing with the Assistant Director of Security or designee. At this Hearing, a determination will be made whether Airport Security will issue another Airport ID badge to the individual.

#### **20.04-13 Escorting in the Restricted Area or other Secure Areas**

(a) Escorting in the Restricted Area is permitted by Red, Red Stripe, Blue, Yellow or White Airport ID Badge holders only.

(b) An escorting badge holder must keep individuals under his or her escort, in view and under his or her control at all times.

(c) For every six (6) unbadged individuals under escort, there must be at least one (1) escorting Airport ID Badge holder (6:1 ratio). Airport Security managers and certain Airport Operations Division managers (Assistant Aviation Operations Managers and above) may approve different escort ratios for special events.

(d) Escorting is not allowed at turnstile locations.

(e) Non-badged individuals will be allowed to be escorted up to three (3) days into the Restricted Area and/or Sterile Area for official business only. Individuals who require more than three (3) daily escorts must be badged or have approval from the Director of Security or designee.

(f) Employees who are awaiting CHRC and STA clearances are not allowed to be escorted into the Restricted Area and/or Sterile Area.

#### **20.04-14 Challenging and Reporting Unauthorized Persons**

(a) Each individual who has been issued an Airport ID Badge is responsible for challenging any individual who is in the Restricted Area or any area where an Airport ID Badge is required and is not wearing an approved Airport ID Badge required for access to the area. An individual who does not challenge an apparently unauthorized person and is observed by Airport Security and/or TSA Security inspectors will be cited for noncompliance.

(b) Any individual challenged who cannot produce proper identification as defined in Rule 20.04-1 must be identified and reported to Airport Operations immediately.

#### **20.04-15 Rule [Intentionally Left Blank]**

#### **20.04-16 Critical Violations "Big 6"**

No individual to whom an Airport ID Badge or Security Keys (including Intellikey(s)) has been issued shall intentionally perform any of the following acts. The intentional commission of any such acts, due to their critical negative effect on the safety and security of Airport employees and the traveling public, is reason for immediate confiscation and suspension (and possible permanent revocation) of the Airport ID Badge, issuance of a Violation Notice, and a Violation Notice Hearing in accordance with Section 20.04-8:

(a) Loaning (or borrowing) the Airport ID Badge or Intellikey to anyone under any circumstances;

(b) Allowing unauthorized individuals or vehicles into the Restricted Area;

(c) Blocking and/or damaging doors, gates, or card readers, and/or leaving doors or gates open that could be a Restricted Area access route for unauthorized individuals;

(d) Bypassing the security system, passing back an Airport ID Badge or Intellikey, or providing access to unauthorized individuals;

(e) Altering the Airport ID Badge; or

(f) Interfering with security screening, security procedures, and personnel.

#### **20.04-17 Other Violations**

Violations other than those listed in Section 20.04-16 shall also be administered in accordance with the provisions of Section 20.04-8. These Airport Security Rules and Regulations will be published at <http://www.flydenver.com> for review by all Airport tenants and companies whose employees have been issued Airport ID Badges, and each such company and its employees are responsible for knowledge of the contents of these Rules and Regulations.

#### **20.04-18 Civil Penalties Imposed by Transportation Security Administration (TSA)**

Any employer not regulated under 49 C.F.R. Part 1544, Aircraft Operator, will be responsible for payment or reimbursement to the City & County of Denver of any Civil Penalties imposed by the Transportation Security Administration (TSA) for individual security violations by their employees for violations under 49 C.F.R. Part 1542.

An employee may be personally subject to Civil Penalties imposed by the Transportation Security Administration (TSA) for individual security violations they commit under 49 C.F.R. Part 1542.

#### **20.05 Submission to Screening and Use of Screening Services, and the Use of Advanced Systems**

**20.05-1** No individual, except law enforcement or TSA officers, may enter a Sterile Area without submitting to the screening of his or her person and property in accordance with the procedures being applied to control access to that area under applicable Federal Regulations.

**20.05-2** Pre-screened charter and scheduled operations are permitted direct access to a concourse in the Sterile Area if the following criteria are met.

(a) Screening of individuals permitted such access by the TSA must have been performed in a commercial passenger airport terminal, and

(b) Limited Essential Air Service (EAS) route substitute mode of transportation and all restrictions thereupon, as approved by the TSA, is utilized.

**20.05-3** Companies will ensure employees submit to screening and the use of biometrics and other advanced technologies as required. Employees refusing to submit to advanced systems and procedures are subject to a Violation Notice and/or confiscation and suspension (and possible permanent revocation) of their Airport ID Badge in accordance with Section 20.04-8.



## **20.06 Three-Foot Clear Zone**

A clear zone of three (3) feet is established for both sides of all security fences around the Restricted Area. The clear zone must not contain any object which could be of assistance to an individual trying to scale a fence. Tenants of the Airport who control security fences by way of a Security Agreement with the Airport are responsible for keeping the clear zones in their area free of obstacles. Failure to comply with the Three-Foot Clear Zone is subject to the Violation Notice Program and/or monetary penalties for failure to comply (Section 1.13.8).

## **20.07 Use of Airport Entrances, Gates, and Doors**

**20.07-1** All badged employees shall enter the Airport by authorized entrances.

**20.07-2** Emergency exit fire doors in the terminal and concourses will be used only in the event of an emergency requiring use of these doors. The only exception is when operational requirements demand use of an emergency door and an Airport ID Badge is used for access. Requests for authorized access will be considered by the Director of Security or designee for approval.

**20.07-3** It shall be the responsibility and duty of air carriers and tenants, and their personnel, to close and secure gates and doors in the terminal and concourse areas when not in use.

**20.07-4** No badged employee issued a Personal Identification Number (PIN) and/or cipher code shall write or verbally announce in a public manner the number/code since it may lead to unauthorized access.

**20.07-5** When an authorized badged employee accesses a door, gate, or elevator leading to or from the Restricted Area, it is the individual's responsibility to ensure that unauthorized individuals do not gain access to the Restricted Area.

**20.07-6** When any contract security guard is in control of a door, gate, or elevator leading to or from the Restricted Area, it is the contract security guard's responsibility to ensure that unauthorized individuals or vehicles do not gain access to the Restricted Area. This applies to contract security guards physically located at the access point as well as any contract security guard who controls a gate from remote locations.

**20.07-7** No pedestrian traffic is allowed in the service tunnels.

**20.07-8** When driving through a gate leading to or from the Restricted Area, the driver must remain at the gate until the gate is fully closed in order to prevent unauthorized individuals or vehicles from going through the gate to the Restricted Area. If, while the gate is open, another individual, unauthorized or authorized but not using their Airport ID Badge, attempts to pass through that gate ("tailgating"), the individual who opened the gate by card access must identify, prevent (to the extent possible without physical contact), and report the individual(s) who attempted to tailgate them through the gate.

**20.07-9** When accessing or controlling a non-access control door, gate, or elevator leading to the Restricted Area, the individual accessing or controlling the access point must challenge



and request Airport-approved identification from all persons who attempt to gain access in order to assure that they are authorized. When accessing or controlling an access control door, gate or elevator leading to the Restricted Area, the individual accessing or controlling the access point must not permit an individual to gain access unless that individual successfully uses their Airport ID Badge in the access control reader. If any badge holder determines that an access control reader or door is inoperative, that individual must immediately notify the Airport Communications Center and stand by until Airport Operations and/or Contract Security personnel arrives on scene and allows the badge holder to leave. If an unauthorized individual attempts to gain access, or actually gains access, the individual controlling access must identify, prevent (to the extent possible without physical contact), and report the unauthorized individual to Airport Operations immediately.

**20.07-10** When an authorized individual accesses an access control door, only that individual may pass through the door. The individual must assure that only they pass through the photo cell on the door during the timed opening of the door (approximately thirty seconds). Group escorting is not authorized unless the group remains under continuous escort of the individual who cards the access control door. If, while the door is open, another individual, unauthorized or authorized but not using their Airport ID Badge, attempts to pass through that door ("tailgating"), the individual who opened the door by card access must identify, prevent (to the extent possible without physical contact), and report the individual(s) who attempted to tailgate them through the door. The last individual to use the door by access control through which illegal entry occurred will be cited for a violation of this rule if he or she does not identify, prevent (to the extent possible without physical contact), and report the individual(s) attempting to tailgate to Airport Operations immediately.

**20.07-11** No pedestrian traffic is allowed through any vehicle Guard Gate (i.e. Gate 1, 5, etc.) or vehicle perimeter gate (i.e. P10, P42, etc.) accessing the Restricted Area.

**20.07-12** Escorting in the Restricted Area is permitted by Red, Red Stripe, Blue, Yellow or White Airport ID Badged individuals only. Individuals not having access control door disable authorization will be required to press the Help button at the entry access control location and obtain permission and assistance from the Airport Communications Center. To return to the interior of a building from a Restricted Area with individuals under escort, the authorized Airport ID Badge holder must open the door by the outside access control reader, pass through the photo cell and press the Help Button on the inside access control reader to obtain permission from the Airport Communications Center to bring escorted individual(s) back through the photo cell and out of the Restricted Area.

**20.07-13** All Airport ID Badged employees in a vehicle entering a guarded security access gate which has an access control reader shall show their Airport ID Badge to the guard on duty. Passengers of the vehicle without an Airport ID Badge must show a government-issued picture ID and be entered into the escort program database (See 20.04-13e for number of times allowed). All Airport ID Badges will be carded on the access control reader or compared to the Stop List. The guard will also conduct a comparison of the badge picture to the person and verify the expiration date of the badge.

**20.07-14** Any badged employee guarding a Restricted Area access point must be in uniform, display an Airport ID Badge, have a radio or telephone for emergency communications, have a current Stop List issued by Airport Security, and written Post Orders.

**20.07-15** Any badged employee operating or using a bag belt who fails to secure it after use will be issued a Violation Notice.

**20.07-16** Any badged employee controlling or operating a jetway boarding door must access using the access control reader before boarding passengers. If a passenger opens the door from the Restricted Area and the door time open expires, the badged employee controlling the boarding will be issued a Violation Notice.

## **20.08 Use of Airport Federal Inspection Services (FIS) Facilities**

**20.08-1** All badged personnel in the FIS facilities during International Flight processing must have an FIS seal displayed on their Airport ID Badge, or be a City & County of Denver badged employee with a working demonstrated need to be in the FIS Facility. The FIS seal does not have escort privileges. Employees with access privileges or an approved Customs and Border Protection (CBP) FIS may not bypass FIS screening while arriving or departing Denver International airport via an international flight.

**20.08-2** No individual shall open a non-international access point door during an International Flight, providing access out of the FIS sterile area.

**20.08-3** No individual shall bypass the security screening checkpoints via the FIS facility.

**20.08-4** No FIS doors may be propped open at any time, except for the emergency exit doors entering into the International nodes.

**20.08-5** All personnel displaying an approved FIS seal are authorized to be in the FIS facilities ONLY during those times which their job requires them to be in the FIS facility.

**20.08-6** Contractors must be escorted at ALL times in the FIS facility by FIS or Airport Operations personnel.

**20.08-7** Bag belts may not be used as a means of entering the FIS facility.

**20.08-8** It is the employer's responsibility to ensure all employees with job titles that have AIJ and/or TFF access groups have an FIS seal.

**20.08-9** All individuals who require an FIS seal must complete the application process conducted by the Customs and Border Protection (CBP) Office.

## **20.09 Conduct in the Restricted Area and/or Sterile Area**

Any individual in the Restricted Area who refuses to cooperate with Airport Operations, Denver Police Department (DPD) or Contract Security, will be issued a Violation Notice under this section

and may have their Airport ID Badge confiscated and suspended pending a hearing in accordance with Section 20.04-8.

## **20.10 Weapons in the Restricted Area and/or Sterile Area**

**20.10-1** ONLY active, on-duty Denver Police (DPD) officers or federal law enforcement officers will be allowed access via the Access Control System to the Restricted Area and/or the Sterile Area with a weapon in lieu of Security Checkpoint screening. Retired law enforcement officers, licensed guards, and persons possessing a concealed carry permit issued by any entity are expressly not allowed into the Restricted Area and/or the Sterile Area with a weapon.

**20.10-2** All off-duty law enforcement officers and Federal Flight Deck Officers (FFDO) accessing the Sterile Area must enter through an approved TSA security check point and follow TSA established credential verification and sign-in procedures.

**20.10-3** On-duty Law Enforcement Officers on official business and under escort by Denver Police (DPD) may enter the Restricted Area. This escort must be approved by either the Director of Security or the Denver Police Department Airport Commander.

## **20.11 Contraband in the Restricted Area and/or the Sterile Area**

Items listed on the Prohibited Items page of the TSA web site ([www.tsa.gov](http://www.tsa.gov)) and items listed as hazardous materials regulated by the FAA located on the FAA web site ([www.faa.gov](http://www.faa.gov)) are forbidden to be in the Restricted Area and/or Sterile Area. As well as, any other item deemed as contraband by local law enforcement authorities. Flammable liquids must be transported in a proper container and in an authorized vehicle. Contraband may not be transported into the Restricted Area and/or Sterile Area on employee busses, or stored in employee lockers.

## **20.12 Photography in the Sterile and Restricted Areas**

Still or moving photography undertaken by anyone that may reveal the operation or location of access control readers, security measures or secured doors within or leading into or out of the sterile and/or restricted area is prohibited.

## **20.13 Unattended Baggage or Articles**

Unattended baggage and/or articles are prohibited in all areas of Denver International Airport. If unattended baggage or articles are found, they are subject to search and may be confiscated by Denver Police Department (DPD) or TSA personnel and may be destroyed.

### **NOTICE**

The Rules and Regulations of the Denver Municipal Airport System are provided on the website of Denver International Airport, [www.flydenver.com](http://www.flydenver.com), as a convenience to the public. Copies may also be obtained from the Department of Aviation's Technical Services Office. The City Clerk is the official custodian of all City rules and regulations under the Revised Municipal Code of the City and County of Denver, sections 2-91 to 2-100. Official, current versions of these rules and regulations may be obtained at the City Clerk's office. For the Clerk's office location and hours, visit the City's website, [www.denvergov.org](http://www.denvergov.org).

Revised February 20, 2009

Denver International Airport Driver Authorization Information and Study Guide  
April 2006

Requirement:

Any individual with job duties that require them to drive in the Restricted Area at Denver International Airport must obtain Driver's Authorization.

Exceptions are:

1. Contract snow removal drivers during snow removal operations.
2. Vehicle operators under escort.

Process:

1. The applicant must have a **current** and valid Colorado Driver's License. New residents are required by State Law to obtain a Colorado Driver's License within thirty days (30) of residency.
2. The applicant must have a **current** and valid Airport ID Badge.
3. The applicant must learn the information contained in this Study Guide. Additional Study Guides may be obtained through their designated company driver trainer or from the Airport Security Office.
4. The applicant must view the airfield driving video. Certain Air Carriers and major Tenants have a copy. If your organization does not have a copy, you may view the video at the Airport Security Office.
5. Answer each of the test questions by marking your choice on the test. All answers to test questions have been taken from the video and the Study Guide. A passing score is 80% or better. Individuals who fail the test will be granted one retest opportunity within seven days (7) after the first date.
6. Tests will be graded by the designated driver trainers for each company or by the DIA Driver Trainer. Each employee will be required to sign the bottom of the test acknowledging that all incorrect answers have been explained and that the employee understands the correct answer for all the questions.
7. The organization that employs the individual driving in the Restricted Area is responsible for providing their drivers with a Driver Familiarization Tour. The applicant will drive under the supervision of the company driver trainer in the areas where they are authorized to drive. The trainer will show approved access point to the airfield, and will emphasize those areas where access is prohibited.

Individuals with Driver Authorization on their Airport ID Badge will have ten business days (10) after successfully completing the non-movement driver training video to take a Driver Familiarization Tour with their company driver trainer or by scheduling an appointment with the DIA Driver Trainer. If Airport Security does not receive certification of this tour within ten business days (10), the Airport ID Badge will be suspended until certification is received. Please note failure to comply may result in the viewing of the non-movement driver training video again, pending on Airport Security's discretion.

Driver's License Update:

All companies that have approved individuals for driver Authorization must ensure the Driver's License information on file at Airport Security is current; or the badge may be suspended.

The safe driving practices required by the State of Colorado also apply to driving in the Restricted Area. All individuals will be expected to obey all traffic signs, markings, speed limits, etc... Violations may result in issuance of a Municipal Court Citation by the Denver Police Department. Other consequences may apply and are covered later in this guide.



#### First Time Vendor Escorts:

Any vendor driver who receives a Driver authorization must first drive the assigned route(s) under an escort provided by a First Watch Guard. This is mandatory to ensure the driver is familiar with assigned route(s). Vendor employee Airport ID Badges will not be activated until the escort has been completed. (Airport Security Plan)

Escorts must be scheduled in advance and are available seven days (7) a week from 6:30-8:00am and 12:30-2:30pm local time.

#### The following requirements must be met before an escort can be scheduled:

1. The driver must have a green vendor Airport ID Badge with Driver Authorization.
2. The driver must bring along the Driver Authorization Training Record.
3. The vehicle must have a DIA Limited Access Vehicle Permit. \$10,000,000 in combined single limit liability insurance is required to obtain the Limited Access Vehicle Permit.
4. A copy of the Vehicle Permit Application with the designated route(s) must be in the vehicle at all times. Bring a copy of the map you received at your Participant Meeting.

#### Restricted Delivery Times:

##### A and B Concourse

Delivery Vendors will not be permitted between 7:00am-12:30pm local and 2:00pm-9:30pm local daily.

##### C Concourses

Delivery vendors will not be permitted between 9:00am-12:30pm local and 3:30pm-6:30pm local daily. If a Contractor requires an emergency delivery the Contractor must escort the Vendor in and out of the restricted Area.

Deliveries are permitted 24 hours a day at the AOB loading and unloading dock

Service vendors will be restricted during weather or emergency situations only.

#### Escorting Vehicles in the Restricted Area:

All vehicle escorts in the Restricted Area, must be approved and coordinated by the Airport Operations Manager (AOM) except for the following:

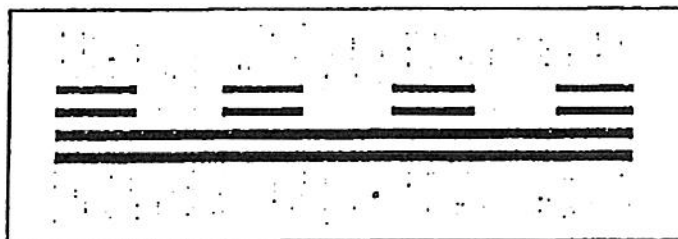
1. Ambulances being escorted by the Airport Police.
2. Dignitaries who are provided U.S. Secret service escort. All escorts of this type must be reported to the AOM by the organization providing the escort. Notification should be as far ahead of time as possible.
3. Air Carriers or Tenants escorting Vendors or Contractors.
4. Contractors escorting contractor vehicles to and from the contractor's work location.
5. U.S. and foreign diplomats who are being escorted with the approval of Public Relations and Marketing. All escorts of this type must be reported in advance to the AOM by Airport Public Relations and Marketing.

#### Surface Movement Guidance and Control System (SMGCS):

During periods of low visibility, when Runway Visual Range (RVR) is less than 1200' or at the discretion of Airport Operations, restrictions to movement of vehicles and equipment will go into effect. All movement of non-essential vehicles in the Restricted Area will cease except those approved by Airport Operations. Air Carriers and Tenants will be notified by means of the briefing phone when the SMGCS plan will be implemented. A phone "hotline" 303-634 1090, will be available 24 hours a day, and will advise when deliveries and non-essential vehicle movement in the Restricted Area is suspended.

Field Information:

Hold bars and stop bars indicate the edge of the runway protected area. NEVER cross a hold/stop bar without an order by Airport Operations.



Runway signs are white lettering on red background; runway markings are white with white edge lights.

Taxiway signs are black and yellow; taxiway markings are yellow with blue edge lights.

ICAO PHONETICS

A Alpha	F Foxtrot	K Kilo	P Papa	U Uniform	Z Zulu
B Bravo	G Golf	L Lima	Q Quebec	V Victor	
C Charlie	H Hotel	M Mike	R Romeo	W Whiskey	
D Delta	I India	N November	S Sierra	X X-ray	
E Echo	J Juliet	O Oscar	T Tango	Y Yankee	



## Section 130 MOVEMENT OF VEHICLES IN RESTRICTED AREA

Unless specifically excepted in this Section, all vehicles and operators in the Restricted Area shall comply with the Regulations in Section 70, "Traffic and Public Safety." In addition, the following regulations apply to traffic in the Restricted Area (AOA and service tunnel):

### **130.01 Vehicle Permits.**

- .01-1 All Vehicle Permit requests are processed by Airport Operations.
- .01-2 All vehicles operating in the Restricted Area must display an Airport Vehicle Permit. Vehicles will also display a company logo with letters at least four (4) inches high on both sides of the vehicle or display a 2' x 3' orange and white checkered flag on the rear of the vehicle. The flag can be obtained through Airport Operations. An exception to the Vehicle Permit requirement is any vehicle driven solely on Airport property and not required to be licensed by the State, such as baggage tugs. All Vehicle Permit Decals must be permanently affixed to the inside of the front windshield below the tinted area. Temporary permits must be placed in the left corner dash.
- .01-3 All Limited Access Vehicle Permit holders will be assigned a specific route(s). Vehicles are authorized only on the specific route(s).
- .01-4 Vehicle Permits may not be transferred between vehicles.
- .01-5 A certificate of insurance must be furnished when applying for a vehicle Permit. Air Carriers and Tenants shall provide their insurance to the Airport Property Office, which will forward a copy to Airport Operations. Contractors and Vendors shall provide their insurance directly to Airport Operations. If a policy expires during the permit period, a renewal certificate must be received by Airport Operations before expiration or the Vehicle Permit may be canceled.
- .01-5(1) Business Automobile Insurance. The owner of a vehicle requesting access to operate in the Restricted Area must show proof of and maintain Business Auto Liability Insurance until the Vehicle Permit expires. The insurance must cover the vehicle(s) for all sums which the owner shall become legally obligated to pay as damages as a result of bodily injury or property damage incurred by the driver of the vehicle up to the limits of liability specified for each occurrence. Such coverage must include all automotive equipment used in the performance of work necessary to provide the delivery of services or supplies, and to conduct Airport-related business in the Restricted Area.

Limits of Coverage shall be not less than the amounts outlined below for specific types of access.

- .01-5(2) All vehicles operating in the Restricted Area without an escort must have a minimum of \$10,000,000 in combined single limit automobile for bodily injury and property damage liability per accident. Carts used exclusively in the tunnel and driven by a person issued a white Airport ID Badge shall have a minimum \$1,000,000 combined single limit coverage. Coverage must include a thirty (30) day notice of cancellation to Airport Operations. In the event of reduction of coverage due to the erosion of the aggregate limits, the permit holder shall immediately take steps to have the coverage reinstated. The permit holder shall be required to keep such Certificates of Insurance on file with Airport Operations, current at all times. Each certificate and policy shall provide that the policy shall not be canceled, or materially and adversely changed or altered without first giving thirty (30) days prior written notice to Airport Operations. Such notice shall include notice for the permit holder not to renew. Ten (10) days advance written notice must be given in the event of cancellation for nonpayment.

- .01-5(3) All regularly escorted vehicles must have a minimum of \$1,000,000 combined single limit liability. Coverage must include a thirty (30) day notice of cancellation to Airport Operations. Any tenant conducting an escort is responsible for ensuring that the vehicle being escorted has adequate insurance coverage and assumes excess liability not covered by the owner of the vehicle as a result of an occurrence during the escort procedure.
- .01-5(4) If an Umbrella Liability Insurance or Excess Liability Insurance policy is used to reach the limits of liability required by the limits of Business Auto Liability, coverage shall not be less than \$10,000,000 with respect to the combined single limits established for each accident or occurrence. The umbrella or excess liability insurance coverage shall not exclude any coverage afforded under the primary policies.
- .01-6 Vehicles operating unescorted in the Restricted Area must meet the following requirements:
- (a) Driver must have a valid Colorado driver's license and an Airport ID Badge as described in Section 20, with a Driver Authorization. Under state law, C.R.S. 42-2-104, all Colorado residents are required to obtain a Colorado driver's license within 30 days of residency.
  - (b) The vehicle must have a current Airport Vehicle Permit.
  - (c) The vehicle must have a company logo on both sides or an orange and white checkered flag attached to the rear of the vehicle.
- .01-7 Any vehicle or driver found to be in violation of these Rules and Regulations pertaining to Vehicle Permits is subject to a Violation Notice being issued and may be prohibited access to the Restricted Area.

#### 10.02 Vehicle Speed Limits in the Restricted Area.

- .02-1 No driver shall drive a vehicle anywhere on the Airport at a speed greater than is reasonable and prudent under the existing conditions.
- .02-2 Vehicles shall not exceed the posted speed limits. Where speed limits are not posted and where no special hazard exists, the following speed limits shall apply:
- .02-2(1) 10 MPH, Inner Concourse roadways, North side A-Concourse and both sides of B-Concourse;
  - .02-2(2) 15 MPH in the service tunnels;
  - .02-2(3) 20 MPH around hangars, buildings, and outer concourse roadways;
  - .02-2(4) 25 MPH east and west roadways around main ramp and gravel perimeter\* roads outside the ramp area. (Exception: City vehicles accomplishing official business as long as paragraph 130.02-1 is adhered to.)
  - .02-2(5) 35 MPH on paved perimeter\* roads as posted.

Perimeter roads are those roads east or west of a line drawn north and south extending Vandriver on the east and Jewbern (Oak Hill) on the west. ONLY Red, Red Stripe badged and Blue badged drivers authorized by Airport Operations are allowed in the Movement Area on the perimeter roads.

#### 30.03 Driving in the Restricted Area.

way over all other vehicles.

- .03-2 No driver shall drive a vehicle across or within the ramp areas beyond the limits of the Vehicle Service Road unless prior permission is given by Airport Operations, with the exception of emergency response vehicles operated by Red or Red Stripe Badged City employees.
- .03-3 The VSR crossing at taxiway SC (South Cargo) is restricted to Red and Red Stripe Badged Drivers ONLY, except as follows: Blue Badged Drivers may be pre-authorized by Airport Operations. The list of drivers so authorized is maintained in Manager's Bulletin 10-9. Other drivers not pre-authorized must request taxiway SC crossing clearance from the Airport Operations Manager or the cargo ramp controller on frequency 131.97.
- .03-4 The baggage interline Vehicle Service Roads between A and B Concourses and B and C Concourses shall be used solely for baggage transfer (no return trips without baggage) or by City employees with Driver Authorization.
- .03-5 No driver shall drive any service vehicle on the Airport unless the vehicle is equipped with resistor-type spark plugs or other devices which eliminate radio interference from ignition noise.
- .03-6 No driver shall operate a vehicle in the Restricted Area or receive Driver Authorization unless specifically authorized as defined below. Authorized drivers are as follows:
  - .03-6(1) Drivers of vehicles used by any governmental agency while in the discharge of their governmental or proprietary duties in the management, operation, or control of the Airport.
  - .03-6(2) Drivers of marked company vehicles who are employed by tenants of the Airport and then only upon the ramp areas and when discharging the tenants' business or duties upon the Airport.
  - .03-6(3) Drivers of vehicles who are expressly granted permission by the Manager of Aviation or his designated representative and then only in compliance with any requirements or restrictions placed on the operations by the Manager or his designated representative.
  - .03-6(4) Drivers of vehicles who are escorted or directed by a firefighter, police officer, or other authorized Airport or airline personnel.
- .03-7 No driver shall drive a vehicle on or across a runway or taxiway except as follows:
  - .03-7(1) No driver shall drive any vehicle on or across a runway unless equipped with a two-way ground control radio and authorized by both the Airport Operations Manager and the FAA Control Tower. The Airport Operations Manager or designee will make initial coordination with the FAA Control Tower for authorization to drive on or across the runway.
  - .03-7(2) No driver shall drive any vehicle on or across a taxiway unless equipped with a two-way ground control radio and authorized by the Airport Operations Manager. The driver must coordinate with the Airport Operations Manager for all work requests before entering the airfield movement or non-movement areas. The only exceptions are as follows: A vehicle not equipped with two-way ground control radio may cross taxiway Z on the Newbern Street VSR (adjacent to taxiway G), taxiway Z on the Vandriver Street VSR (adjacent to taxiway L), and taxiways EC, P7, and ED on Electra Street, provided they give right-of-way to aircraft and obey all traffic signs and speed limits. Crossing taxiway Z on the Newbern Street VSR and taxiways P7 and ED on Electra Street shall be suspended during SMGCS (Service Movement Guidance Control System) operations.

.03-7(3) Air carrier vehicles, even though equipped with ground control radios, are not allowed on taxiways, runways, or the ramp areas other than gate areas, with only one exception: airline vehicles may use the VSRs between the concourses solely in support of interline baggage delivery. When required to operate outside the gate or concourse areas, air carrier vehicles must obtain escort service from Airport Operations, Airport Police, or Maintenance vehicles.

.03-7(4) An aircraft taxiing to or from a runup area may escort one (1) aircraft maintenance vehicle to or from that runup area. The aircraft and the maintenance vehicle must maintain two-way radio communications at all times. The aircraft maintenance vehicle must closely follow or drive alongside of the aircraft and immediately notify the aircraft operator if the vehicle cannot maintain its position. The aircraft must taxi at a speed which is reasonable and prudent for the escorted vehicle given the existing conditions. The aircraft must obtain clearance from the Ramp Control Tower and FAA Control Tower prior to beginning a escort of this type.

.03-8 The driver of any vehicle who drives onto an active runway or taxiway without prior approval of the FAA Control Tower and Airport Operations has violated major safety and security rules, may be denied the privilege of driving in the Restricted Area and may be subject to immediate revocation of their Driver Authorization and their Airport ID Badge.

.03-9 All personnel who operate vehicles in the Restricted Area are required to have an Airport ID Badge with Driver Authorization, except:

.03-9(1) Contract snow removal drivers during snow removal operations.

.03-9(2) Contract drivers on an established haul route.

.03-9(3) Drivers escorted by another vehicle in accordance with Section 130.04 below.

.03-10 All vendor drivers who receive Driver Authorization for the Restricted Area must first drive their assigned route(s) under escort provided by or approved by Airport Operations.

#### **10.04 Escorting Vehicles in the Restricted Area.**

.04-1 Any vehicle not meeting all of the following requirements must be escorted while operating in the Restricted Area:

.04-1(1) Airport Vehicle Permit.

.04-1(2) Owner's logo or checkered flag.

.04-1(3) Driver with Airport ID Badge with Driver Authorization.

.04-1(4) Driver trained to drive in the Restricted Area and trained to drive in the specific area of the Restricted Area where the vehicle is driven.

.04-2 Licensed vehicles which are used to escort other vehicles in the Restricted Area must have an Airport Vehicle Permit and must have either a flag or logo on the vehicle.

.04-3 Drivers who escort other vehicles in the Restricted Area must have the following:

.04-3(1) A valid Airport ID Badge which is authorized for escort privileges.

.04-3(2) A Driver Authorization.



.04-3(3) Non-City employees must ensure that the vehicle being escorted obtains a Temporary Escort Permit Card.

.04-4 Drivers who escort other vehicles may not escort as a passenger; escorting must be done with a separate vehicle.

.04-5 The escorted vehicle and escorted individuals must be in view and under control at all times.

.04-6 The escorted movement of an exceptionally large, tall, or slow vehicle (i.e., large crane, vehicle carrying an oversized load, etc.) must be coordinated with the Airport Operations Manager prior to the movement.

#### **130.05 Restricted Area Driver Training.**

The organization which employs vehicle operators in the Restricted Area is responsible for providing their operators, at a minimum, the following training:

.05-1 Understanding all Airport Rules and Regulations and Airport guidance on driving in the Restricted Area

.05-2 Driver Familiarization where the drivers drive under supervision in the areas where they are authorized to drive and includes the trainer indicating the location of all runways, taxiways, ramp areas where they are prohibited from driving without approval of Airport Operations. The trainer will provide certification to Airport Operations that the driver has received the familiarization training.

.05-3 Complete familiarity with the equipment which they are allowed to operate.

.05-4 Safety considerations while operating their type of equipment in their authorized areas.

.05-5 A checkout (certification by a supervisor) in each type of equipment which they are authorized to operate in all areas which they are authorized to drive.

#### **130.06 Driver Recertification.**

.06-1 All individuals with Driver Authorization will be required to be recertified for driving in the Restricted Area. Recertification for employees of the Department of Aviation, Airlines, and Tenants (with Red, Red Stripe, Blue or White badges) will be conducted every two years according to the employee's Airport ID Badge expiration date. Recertification in connection with revalidation of the badge can be accomplished within the 30 day period before the badge expiration.

.06-2 For vendor or contractor employees with Driver Authorization (Green or Yellow Badge), driver recertification will be required with Badge Revalidation.

.06-3 To complete recertification, the individual must complete Driver Familiarization Training by an authorized Driver Trainer, view the driver training film, pass the written test, and submit a valid Colorado Driver's License.

#### **130.07 Enforcement of Driving.**

.07-1 Denver Police Department personnel assigned to the Airport have the authority to write traffic citations on the AOA for any offense for which a citation can be written on City and County of Denver streets. In addition, they can write citations on any violation of these Airport Rules and Regulations.

- .07-2 Airport Police and selected Airport Operations personnel are authorized to write a Violation Notice on any violation of these rules. Airport Police have the discretion of determining whether to write a traffic citation or a Violation Notice for any city traffic violation or violation of rules for driving on the AOA.
- .07-3 Any driver who receives three Violation Notices within one year will lose his or her driving privileges on the AOA for up to one year. The duration of the driving privileges loss will be determined by the Airport Security Manager.

#### 0.08 Vehicle Traffic in Tunnels and Baggage Areas.

- .08-1 Except for emergency vehicles responding to an emergency, all vehicles granted access to the tunnels, baggage makeup areas, or other enclosed area at the Airport must be a battery powered or operated on Compressed Natural Gas (CNG). Receipt of a Vehicle Permit for a CNG vehicle may be conditioned upon passing an annual emissions test conducted by the City or its authorized agents. The City shall publish permitted levels of emission and monitor compliance for vehicles operating within the enclosed area.
- .08-2 Dual fuel systems are permitted on vehicles, provided that only CNG fuel be used when operating in the enclosed areas. Both open and closed CNG loop systems are permitted provided that emission levels comply with published standards. Use of propane, gasoline, or diesel power is prohibited.
- .08-3 The maximum height for vehicles operating in the tunnels at the Airport is eight (8) feet unless otherwise posted.
- .08-4 Parking is prohibited in traffic lanes, fire lanes, specifically marked areas, and within ten (10) feet of emergency exit doors.
- .08-5 Vehicles equipped with snow plows are prohibited in the tunnel system.

#### 10.09 Parking.

o driver shall park any vehicle as follows:

- .09-1 In an aircraft gate area so as to block aircraft access to that gate; emergency vehicles excepted.
- .09-2 In any location so as to block aircraft access to any taxiway or ramp area.
- .09-3 In marked fire lanes.
- .09-4 Within ten (10) feet of a concourse, terminal or tunnel emergency exit doors.
- .09-5 In any area specifically marked "No Parking", or an area of painted hash-marks on pavement.
- .09-6 In a manner or location so as to block or restrict access to a tenant's leasehold or designated working area.

#### 30.10 Commercial Drivers License (CDL) Exemption.

Employees of tenants are not required to obtain a Commercial Drivers License (CDL) to operate dual-axle vehicles on the Airport Operations Area provided said vehicles are unlicensed/unregistered, and as such cannot be driven over the road.

#### 30.11 Maximum Length of Baggage Trains.



- .11-1 Baggage trains operating on the ramp and vehicle service roads will not exceed a maximum of five carts behind the tow vehicle.
- .11-2 Baggage trains operating in the tunnels and under the concourses or terminal building will not exceed a maximum of four carts behind the tow vehicle.

#### **130.12 Operation of Bicycles on the Airport.**

- .12-1 Bicycles shall not be operated in or under the terminal, concourses, parking areas, or Restricted Area. Mixing unpowered vehicles with aircraft and powered vehicles represents an unacceptable safety hazard. Bicycles operated in the terminal building or on concourses are a safety hazard to pedestrian traffic and will be confiscated.
- .12-2 Airport Police bicycles may be operated in parking structures and outlying parking lots while conducting official business.
- .12-3 If a tenant wishes to allow bicycles to operate within their leased hangar ramp areas, they will accept full responsibility.

#### **130.13 Operation of Motorcycles in the Restricted Area.**

Motorcycles shall not be operated in the Restricted Area, except Airport Police motorcycles are authorized to drive from G5 or P58 to fuel or obtain repairs at the Maintenance Facility.

#### **130.14 Vehicle Weight Restrictions for Concourse Ramp Level Floors.**

The Concourse A and C ramp level floor areas are restricted to repetitive wheel loads of 6,000 lbs. per wheel, with the exception of the VSR drives through the subcores which can accommodate aircraft pushback tugs with a maximum of 55,000 lbs. on 40,000 lbs. per wheel.

Concourse B ramp level floors are restricted to tugs with a maximum weight of 100,000 lbs. on 29,000 lbs. per wheel

#### **130.15 Operation of Electric Carts in the Restricted Area.**

Electric carts are prohibited from driving in the Restricted Area, except in the service tunnels, by tenants in their exclusive leasehold areas, or on the inner concourse VSRs for the sole purpose of emergency maneuvers from the east to the west service tunnels.

#### **130.16 Unlicensed Vehicles.**

Unlicensed vehicles are authorized only on the following Airport roads:

- Queensburg Street between Gate G4 and the Fuel Farm
- 75th Avenue between Gate G5 and the Continental GSE Facility Restricted Area driving and permitting regulations apply, and the vehicles are prohibited from leaving Airport property or deviating from the routes described.

#### **NOTICE:**

The Rules and Regulations of the Denver Municipal Airport System are provided on the website of Denver International Airport, [www.flydenver.com](http://www.flydenver.com), as a convenience to the public. Copies may also be obtained from the Department of Aviation's Technical Services Office. The City Clerk is the official custodian of all City rules and regulations under the Revised Municipal Code of the City and County of Denver, sections 2-91 to 2-100. Official current versions of these rules and regulations may be obtained at the City Clerk's office. For the Clerk's office location and hours, visit the City's website, [www.denvergov.org](http://www.denvergov.org).

## SECTION 01041

### PROJECT COORDINATION

#### **PART 1 GENERAL**

##### **1.1 Schedules**

###### **A. Project Schedule:**

1. Upon award, the Contractor will have 21 calendar days to obtain badges, obtain approved submittals, order materials, and coordinate installation schedules and runway closures. During this time, installation will not be allowed without advance approval from the FAA Project Engineer.
2. After the initial 21 calendar days, the contractor shall complete all contract work within 104 calendar days and in the following order:
  - A) Stage 1 - Complete Within First 30 Calendar Days
    - Initial Cable Tests – all reels
    - Construction of Ductbanks & Installation of J-Boxes at 16L LOC and 34R LOC.
    - Installation of Risers on 10 vaults.
    - Eastside Facilities: All work associated with 26 LOC, RCF B, 35L LOC & 17R GS facilities.
  - B) Stage 2 - Complete After Stage 1 & Within 60 Calendar Days
    - Westside Facilities: All remaining work associated with 34R LOC, ASR & 16L LOC facilities.
    - ATCT-TRACON – Installation of innerduct, cables and associated items in 2 paths between these facilities.
  - C) Stage 3 - Complete After Stage 2 & Within 14 Calendar Days
    - Southside: All work associated with TRACON to RCF C & 17R LOC facilities.
    - Final Cable Tests – 12 facilities
3. In order to accommodate two work crews at differing work areas, the FAA will have two Contracting Officer's Technical Representatives (COTR) for all of Stage 1 work and two COTRs for half of Stage 2 work. The remaining portions of the contract will have one COTR.
4. During the Thanksgiving and Christmas holidays, the FAA has a moratorium which ceases all construction activities. The dates of these have not been announced but will likely be from November 18, 2011 through November 30, 2011 and from December 17, 2011 through January 3, 2012. The contractor will not be allowed to work during these periods and, for the purposes of this contract, these dates will be considered as "non-calendar days." The contractor shall make allowance in his/her schedule for these dates.

- B. Work Hours: Unless approved otherwise by the FAA Project Engineer, all work will be performed within a maximum time frame of 10 hours per day and no more than 5 days/nights per week. No work will be performed from 5:30 PM on Friday to 8 PM on Sunday, or on Federal holidays or moratoriums. Day work shall be performed between the hours of 7am and 5:30pm. Night work shall be performed between the outage times approved by Air Traffic. Night work will not be allowed for any work that can be accomplished during the day.
1. All work within a ramp or gate area is required to be completed at night during an approved closure and with an FAA System Service Center escort. In general, this area contains the Air Traffic Control Tower and airport concourses, and extends to Taxiway G on the west side and Taxiway M on the east. Night closure times can vary, but are normally from 10 pm to 5 am.
  2. All work required for cable run areas 26 LOC to ATCT; RCF B to ATCT and 35L LOC to ATCT shall be completed during the Denver International Airport's closure of Runway 8/26 tentatively scheduled for August 1 – September 9. During this time, all work north of the safety area of taxiway ED must be accomplished during normal daytime hours. All work south of this must be accomplished at night during approved closures.
  3. All work required for cable run areas 17R Glide Slope to RCF E and 16L Localizer to ATCT must be accomplished at night during approved closures.
  4. For cable run areas ATCT to TRACON (both paths); ASR to ATCT; and 34R LOC to ATCT, approximately half of each run is within a restricted safety area. Work in a restricted safety area must be accomplished at night during an approved closure.
  5. All work required for cable run areas TRACON to RCF C and TRACON to 17R Localizer must be accomplished during normal daytime hours.
  6. All work related to the ductbank construction at the 16L localizer and the 34R localizer must be accomplished during daytime hours. However, there will be a restriction on equipment heights and the work area.
- C. Preconstruction Conference: As soon as practicable after the contract is awarded a preconstruction conference between representatives of the FAA and the Contractor will be scheduled. Project requirements, scope and schedule will be discussed.

## 1.2 Coordination

- A. All work shall be coordinated with the FAA, the Airport staff and any other users/customers/government agencies which may have interest. The contractor will not be allowed on the AOA or near any work area without the Contracting Officer's representative (COTR).

- B. Even though it is anticipated that work in certain areas will be accomplished during the daytime, the City of Denver may restrict access. The contractor shall adjust his/her work schedule as necessary to meet required work times.
- C. Access to the airfield will likely be denied or restricted during severe, stormy or foggy weather conditions. The contractor shall account for non-workable days due to weather in his/her bid.
- D. The contractor shall comply with the City of Denver's Airport System Rules and Regulations.

### 1.3 Contract Administration

- A. The Contracting Officer's Representative (COTR) shall be the FAA's onsite representative for all matters relating to the technical requirements of the project. This person will also be referred to as the Resident Engineer (RE). Coordinate all communication through the Contracting Officer's Representative (COTR) and/or Resident Engineer (RE).
- B. The contractor shall complete a Request for Information form for all questions regarding this contract. The completed form shall be presented to the resident engineer who will coordinate with the FAA project engineer for an official FAA written response. This written response will be binding to the contract. The contractor will encounter numerous individuals with different levels of responsibilities and different levels of authority. No one, except for the FAA project engineer and the contracting officer, has the authority to interpret this contract – either verbally or in writing.
- C. Due to the possibility of miscommunications, verbal conversations between the contractor and Contracting Officer's Representative will not obligate the government or serve to modify contract requirements.

### 1.4 Inspection

- A. The contractor shall control the quality of the work and have a quality control inspector on site whose duties include inspecting the work for compliance with the contract. Copies of all records and measurements shall be provided to the COTR.
- B. In addition to receiving the information from the contractor's quality control inspector, the Contracting Officer's Representative will independently inspect all work in progress up to completion and final acceptance including workmanship and all materials, tools, and equipment.
- C. The contractor shall cooperate fully with the COTR and not hamper the inspection or cover up un-inspected work.
- D. Inspection may extend to all or a part of the work for the preparation, fabrication or manufacture of the materials to be used.

- E. The COTR will notify the Contractor of any non-compliance with the contract specifications and/or drawings, and may reject workmanship or materials accordingly.
- F. Failure of the COTR / RE to recognize work not in compliance with the contract does not relieve the contractor of correcting deficiencies at his/her own expense at a later date. The COTR/RE does not have the authority to approve or accept work.

#### 1.5 Close Out

- A. Notify the COTR when Work is considered ready for Substantial Completion. Conduct a Walk-Thru with the COTR and record a list of final work items.
- B. After completion of the final work items, a Construction Acceptance Inspection (CAI) will then be scheduled at a time acceptable to the FAA Site Technician and FAA Project Engineer. The CAI shall be attended by the COTR, FAA Project Engineer, the FAA Site Technician (from the local SSC), the Contractor and any appropriate sub-contractors.
- C. All requirements of the contract shall be completed and ready for inspection at the time of the CAI. Multiple CAIs may be scheduled so that each phase can be completed and accepted before the next phase begins.
- D. Complete all punch-list items from the CAI.
- E. Provide final submittals.
- F. Submit final Application for Payment following the CAI and acceptance of submittals.
- G. Final Clean up. Execute final clean-up prior to the CAI. Remove waste and surplus materials, rubbish, and construction facilities from the site.

**\*\*\*END OF SECTION\*\*\***

CONTRACTOR INITIATED REQUEST FOR INFORMATION (RFI)						DATE:	RFI NUMBER:
CONTRACT NO:				TITLE:			
<div style="display: flex; justify-content: space-between;"><div><input type="checkbox"/> CLARIFICATION</div><div><input type="checkbox"/> INFORMATION ONLY</div><div><input type="checkbox"/> VARIANCE REQUEST</div></div> <div style="display: flex; justify-content: space-between;"><div><input type="checkbox"/> DIRECT CHANGE</div><div><input type="checkbox"/> GOVERNMENT CHANGE</div><div><input type="checkbox"/> CHANGED/UNFORESEEN CONDITION</div></div>							
REQUESTING INDIVIDUAL:				REVIEWED BY:			
Specification Section/Paragraph:			Drawing No:			Detail No:	
DESCRIPTION:       							
Attachment(s): [ ] Yes [ ] No			RFI Impact Sketch: [ ] Yes [ ] No			Subcontractor Work: [ ] Yes [ ] No	
<p>This matter requires comprehensive review/inspection of the contract documents and/or the jobsite by the Owner/Engineer. Additional information regarding this matter will be provided should it be required. Unless [ ] Until [ ] (mark one) directed by the Government in writing to do otherwise, the Contractor will [ ] will not [ ] proceed as per the drawings and specifications. Please provide the Contractor with a written decision by _____.</p> <p>This matter may [ ], will [ ], will not [ ] cause delay, extending the contract completion date/ time. It may [ ], will [ ], will not [ ] increase the cost of this project.</p> <p style="text-align: center;">Contractor's Signature _____ Date _____</p> <p>Completion of this form by the contractor is required for the release of additional contract information or consideration of a change order.</p>							
<b>GOVERNMENT RESPONSE:</b>							
See Below and Others As Marked : _____ Letter/Memo(attached), _____ Meeting, _____ Other Reference							
REMARKS:       							
GOVERNMENT REPRESENTATIVE/ARCHITECT:  _____							DATE:
(Signature)							(Title)



## **SECTION 01300**

### **SUBMITTALS**

#### **PART 1 GENERAL**

- 1.1 Submittal Requirements. - Submittal data required by this contract shall be submitted to the FAA project engineer for review and approval. In order to meet a 21 day completion, all submittals shall be initiated within 7 calendar days after contract award. Unless directed otherwise by the FAA project engineer, the contractor shall not proceed with any construction work until after approval of all submittals.
- 1.2 Submittal Procedure –
  - 1.2.1 Three complete sets (to include one reproducible) of all shop drawings and/or product data shall be submitted by the contractor. Shop drawings shall be accurate and drawn to scale. One stamped set will be returned to the contractor.
  - 1.2.2 All submittals shall be accompanied by a transmittal letter which identifies the item and the data submitted, notes any substitutions or deviations from the specifications and contains the prime contractor's approval signature. Transmittal letters shall consist of one original and one copy.
  - 1.2.3 All submittals, including those from subcontractors, shall be checked and approved by the Contractor and coordinated with any other work involved before they are transmitted for review. Submittals shall be complete and detailed, and assembled in sets. Lack of completeness or inadequate descriptions will be justification for disapproval.
  - 1.2.4 The FAA requires five (5) working days for reviewing and responding to each submittal. The contractor shall account for this review period during this contract.
- 1.3 Submittal Review – The FAA project engineer will stamp, check the review status, sign and date each submittal page. The contractor shall address the review status as follows:
  - 1.3.1 Approved As Submitted – If stamped and checked “No Exception Taken,” the submittal is approved. After submittals have been approved, no changes or substitution will be permitted without written approval by the FAA project engineer.
  - 1.3.2 Approved As Noted - If stamped and checked "Make Corrections Noted," the submittal is satisfactory contingent upon the Contractor's acceptance of the comments and notations; no re-submittal is required. If not accepted, the contractor must resubmit.
  - 1.3.3 Not Approved - If stamped and checked “Revise and Resubmit” or “Rejected,” the submittal does not meet job requirements and the contractor must resubmit. The contractor shall resubmit the corrected material in the same manner as the original.

\*\*\* END OF SECTION \*\*\*

## SECTION 02684

### COMMUNICATIONS DUCTBANK

#### PART 1 GENERAL

- 1.0 Description of the Work: This specification covers the construction of communication ductbanks, the installation of vault risers, the installation of name plates and the placement of base material and gravel surfacing. The Contractor shall provide all labor, equipment, and material to install name plates, risers and ductbanks including conduits, innerducts, fittings, concrete, backfill, warning tape and appurtenances as specified herein and in the site drawings. Locations shall be as shown on the facility drawings. Duct banks shall also comply with the requirements on drawing NMSD-D-MISC-C004, Communication Conduit Trench and Utility Crossing Details.

Specific Items of Work:

- a) Construction of a concrete-encased, communication ductbank consisting of two 4" conduits, each with three 1 1/4" innerducts with preinstalled mule tape from vault #419 to the 34R Localizer shelter handhole and from the shelter handhole to the 34R Localizer shelter. Approximate distance is 40 feet.
  - b) Construction of a concrete-encased, communication ductbank consisting of two 4" conduits, each with three 1 1/4" innerducts with preinstalled mule tape from vault #304 to the 16L Localizer shelter handhole. Approximate distance is 80 feet.
  - c) Construction of a communication ductbank with two GRS conduits, each with three 1 1/4" innerducts with mule tape, from the existing 16L Localizer shelter handhole to the 16L Localizer shelter. Approximate distance is 6'-2".
  - d) Installation of risers as necessary to match grade on vaults: 102 (+/-2'), 103 (+/-2'), 202 (+/-1'), 250 (+/-1'), 249 (+/-1'), 255A (?), 254 (?), 257 (+/-1'), 305 (+/-2') and 353 (+/-3'). Contractor shall determine riser requirements in the field prior to ordering risers.
  - e) Install name plates on vaults: 133, 205, 214, 253, 255A, 262, 400, 401, 423 and 424.
  - f) Re-grading of all disturbed areas. Placement of gravel surfacing on facility plots.
- 1.1 Applicable Publications: - Latest edition of the following form a part of this specification:
- 1.1.1 American Society for Testing and Materials (ASTM).
- |                |   |
|----------------|---|
| ASTM A 615-94  | Deformed and Plain Billet-Steel Bars for Concrete Reinforcement   |
| ASTM C 150-94  | Portland Cement.  |
| ASTM C 618-94a | Coal Fly Ash and Raw of Calcined Natural Pozzolan for users as a Mineral Admixture in Portland Cement Concrete. |
| ASTM D 449-89  | Asphalt used in Damproofing and Waterproofing.  |
| ASTM D 1785-93 | Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe,   |

- |                 |  |
|-----------------|--|
|                 | Schedules 40, 80 and 120.  |
| ASTM D 2466-94a | Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.            |
| ASTM D 2564-93  | Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings. |
- 1.1.2 Federal Specifications.
- |             |  |
|-------------|--|
| FAA-C-1391b | Installation and Splicing of Underground Cables        |
| W-C-1094    | Conduit and Conduit Fittings: Plastic, Rigid           |
| WW-C-581    | Conduit, Metal, Rigid; and Coupling, Elbow and Nipple. |
- 1.1.3 Underwriters' Laboratories, Inc.
- |        |                                      |
|--------|--------------------------------------|
| UL 651 | Schedule 40 and 80 Rigid PVC Conduit |
| UL 6   | Rigid Metal Conduit                  |
- 1.1.4 National Electrical Manufacturers Association (NEMA) Publications.
- |     |   |
|-----|---|
| TC2 | Electric Plastic Tubing (EPT), Conduit (EPC-40) & Fittings      |
| TC6 | PVC and ABS Plastic Utilities Duct for Underground Installation |
- 1.2 Related Sections:
- A. Section 16136 Raceways and Junction Boxes
  - B. Section 16670 Lightning Protection, Bonding and Grounding
- 1.3 Submittals: Submit the following for review and approval prior to installation.
- A. Dewatering Plans
  - B. Control Density Fill: mix design and supplier
  - C. Base Material: gradation tests and supplier certification
  - D. GRS Bedding Materials: gradation tests and supplier certification
  - E. Gravel Surfacing: gradation tests and supplier certification
  - F. GRS conduits & Fittings: product data sheet
  - G. Insulated, grounding bushings: product data sheet
  - H. 4" Schedule 40 PVC conduit, bell ends & fittings: product data sheets.
  - I. Innerduct: product data sheet
  - J. Duct spacers: product data sheet
  - K. Concrete: mix design, compression test reports and supplier
  - L. Concrete Vault Risers: product data sheet and supplier
  - M. Vault Name Plates: Sample or product data sheet and supplier
- 1.4 Quality Assurance:
- 1.4.1 Delivery and Storage: Deliver and store materials in a manner that will prevent contamination and damage. Conduits shall be stored to avoid warping and/or deterioration with ends sufficiently plugged to prevent entry of any water and solid substances.
- 1.4.2 The contractor shall obtain bedding, base and gravel surfacing materials from a Colorado

DOT approved, commercial source. The contractor shall submit a copy of each supplier's DOT certification, as well as the test reports for each material used. All tests shall have been performed within 6 months of the delivery date.

- 1.4.3 The contractor shall obtain control density fill and concrete from a Colorado DOT approved plant. The contractor shall submit a copy of each supplier's DOT certification, as well as test reports for each material used. All tests shall have been performed within 6 months of the delivery date.
- 1.4.4 At the time of material delivery, the contractor shall give the COTR a copy of the material delivery ticket. The delivery ticket shall contain the following information: name of supplier, date of delivery, time batched, quantity, and specification that the material meets.
- 1.4.5 Inspection of Installed Conduits: Prior to placing concrete or any conduit backfill, the contractor shall obtain the approval of the installation from the Contracting Officer's Representative. Concrete shall not be delivered until the installation is approved.
- 1.4.6 The contractor shall provide an independent (not supplier), certified testing laboratory for concrete slump, air-entrainment and compressive strength tests. Concrete shall be tested initially to assure compliance with the submittal and whenever the consistency appears to vary. There shall be a minimum of 1 slump test and 1 air test for each truck batched. There shall be 1 compression strength test with breaks at 1-day, 3-day and 28-day. The contractor is responsible for the consistency of the concrete throughout the project and shall make corrections to the submittal at no cost to the government if the quality of the mix does not meet performance or strength requirements.

## **PART 2 MATERIALS**

- 2.1 General: Materials furnished by the contractor shall be new, the standard products of the manufacturers' regularly engaged in the production of such materials, and complete systems as required by the manufacturer and as necessary to comply with these specifications. All imported materials shall be free of contaminated soils.
- 2.2 Control Density Fill: Control Density Fill material shall have unconfined compressive strength of 300 psi. and consist of Portland cement, fly ash, fine aggregate and water. The fine aggregate shall have a minimum sand equivalency of 20, be non-plastic, and a gradation of 100% passing the 3/8" sieve and 0-12% passing the #200 sieve. The amount of fine aggregate shall be in the vicinity of 2500 lbs/ cu. yd. The mix shall consist of 60 lbs /cu yd. cement and 340 lbs/ cu yd. fly ash or a ratio of 15% cement to 85% fly ash. Water shall be sufficient to provide an 8" slump.
- 2.3 Galvanized Rigid Steel Conduit: Shall be 4 inch inside diameter, hot dipped galvanized steel conforming to Federal specification WW-C-581 and UL 6. All fittings shall be threaded type and of the same material as the conduit. Insulated, grounding bushings required at terminations to vaults/handholes and junction boxes.
- 2.4 Polyvinyl Chloride (PVC) Plastic Pipe: Shall be 4 inch inside diameter, schedule 40,

heavy wall rigid plastic with PVC fittings and accessories designed for direct earth burial; shall be in 20-foot sections; and shall conform to Federal specification W-C-1094, and ASTM D 1785 and be UL listed. Fittings shall be in accordance with ASTM D 2564. Bell ends required at all terminations in vaults.

- 2.5 Solvent-Cemented Joints: Shall be in accordance with ASTM D 2564.
- 2.6 Duct Spacers: PVC conduits to be encased in concrete shall be supported and separated with non-metallic duct spacers that interlock and provide the required ground and conduit clearances.
- 2.7 Duct Encasing Concrete: Shall be minimum compressive strength of 4000 psi at 28 days. Concrete shall have a 0.40 maximum water/cement ratio, 4 ½% to 6 ½% air entrainment, and a maximum 3-inch slump. Concrete shall be proportioned in accordance with ASTM C94 for ready mixed concrete. Maximum aggregate size shall be ¾" per ASTM C33. No Concrete mix shall consist of Portland cement, fly ash, coarse aggregate, fine aggregate, water and air-entrainment agent. No additional additives shall be used.
- 2.8 Reinforcement: ASTM A 615 Grade 60 unless otherwise specified.
- 2.9 Innerduct: Innerduct shall be orange corrugated, polyethylene tubing of 1 ¼" nominal diameter in compliance with ASTM D3350 and with pre-installed, pre-lubricated, woven polyester tape with footage markings. Tape shall be a min. of 1250 lb. strength.
- 2.10 End Caps: End caps for conduit and innerduct terminations in vaults shall be of the same material and appropriately sized for the duct. End caps shall be dirt and water-resistant and have a pull rope tie off point.
- 2.11 Warning Tape: Shall be orange polyethylene plastic and metallic core or metallic-face, acid- and alkali- resistance polyethylene plastic manufactured specifically for warning and identification of buried underground utilities. It shall be have a 3" minimum width, 6 mil minimum thickness with identification imprinted in permanent, bold black letters.
- 2.12 Vault Name Plates: Stainless steel plate of 1/16" minimum thickness and minimum size of 3 inches by 6 inches, brazed or fastened to the cover with two 10-32 brass screws. Identification letters to be minimum 1" high and die stamped on to plate. Identification shall state "FAA COMM" and then the specific vault number. Example as follows:

FAA COMM  
# 110

- 2.13 Risers: Shall be precast concrete with reinforcing steel and designed for installations on vaults with AASHTO H-20 loading classification. Joints with vault sections shall be made water tight with rubber gaskets meeting ASTM C-443.



- 2.14 GRS Pipe Bedding Material: GRS pipe bedding material shall consist of clean sand with 100% passing the 3/4" sieve opening. Material shall not contain clays or organic material.
- 2.15 Aggregate Base Material: Aggregate base material shall consist of clean, sound crushed stone or gravel in conformance with Class 1 of Colorado DOT standard specification 703.03. It shall have a liquid limit less than 35 and a plastic limit less than 6. It shall have 95-100% passing the 2" sieve opening; 30-65% passing the No. 4 sieve opening; 40-55% passing the 1/4" sieve opening; and 3-15% passing the No. 200 sieve opening.
- 2.16 Gravel Surfacing: Gravel surfacing shall consist of clean, sound crushed stone or gravel with 100% passing the 1 1/4" sieve opening; 50-80% passing the 5/8" sieve opening; 24-45% passing the No. 4 sieve opening; 4-18% passing the No 40 sieve opening and 0-7.5% passing the No. 200 sieve opening.

### **PART 3 EXECUTION**

- 3.1 General: The contractor shall construct a communication ductbank system to the lines and grades designated on the drawings and in compliance with the specifications herein and the drawings. Each communication ductbank shall consist of two (2) 4" conduits, each with three 1 1/4" innerducts with mule tape. At the FAA facility buildings, the contractor shall connect the ductbank system to GRS conduit sweeps and risers to an exterior shelter junction box per the drawings and specification 16136.
- 3.2 Underground Utilities & Structures – The contractor shall physically verify the location and elevation of all underground utilities in and around excavation areas prior to the work. In areas where existing utilities are suspected or actually located and where the utility is not designated for demolition, the contractor shall excavate carefully by hand to avoid damage. The contractor shall hand excavate all excavations within four feet of any structure.
- 3.3 Excavations – During the excavating operation, the contractor shall stockpile the following in separately stockpiles: 1) topsoil, 2) suitable backfill material and 3) unsuitable, excavated materials. All unsuitable, excavated materials shall be removed and properly disposed of off-site at the end of each work week. If contaminated soils are encountered, the contractor shall notify the COTR and stop work in the area until instructed on how to proceed. Material stockpiles must be no more than 2.5 feet in height. Materials shall not be stockpiled within 10 feet of any perimeter security fence. Stockpiles shall be covered with plastic to prevent materials from eroding onto adjacent areas. The contractor shall coordinate material stockpile areas with the COTR. All excavations shall provide a slight slope and sump to allow water to drain away from the trench rather than collect in it.
- 3.4 Subgrade: - Excavate to subgrade elevations necessary to provide a finished product that meets the cross sectional areas specified on the drawings and as necessary to meet final

elevations. Trim bottoms of excavations to provide for a uniform solid base to receive other work. Protect subgrade from softening, undermining, washout, damage by rain or water accumulation and damage by construction activities. Water shall not be allowed to accumulate in the trenches. The contractor must completely pump out any water and reconstruct any subgrade that has been damaged. Excavate soil disturbed or weakened by Contractor's operations and soils softened or made unsuitable for subsequent construction due to exposure to weather.

- 3.5 Ductbank Base Placement: Upon the subgrade, place control density fill material up to 3.5 inches below the bottom elevation of the new conduits and in a minimum depth of 3 inches. Level top of fill to accommodate communication conduits. Do not disturb or work on finished surface for at least 8 hours.
- 3.6 Conduit Installation: All conduits shall be installed and jointed in accordance with these specifications and the manufacturer's recommendations. PVC conduits shall be as shown on the drawing detail "Conduit Trench Detail - Concrete Encased. GRS conduits shall be as shown on drawing detail "Conduit Trench Detail - Non-Concrete Encased". Installation shall be as designated herein and as shown on the drawings. All conduits shall be separated from any existing, crossing utility as directed by the drawings or, if not directed, by a minimum of 12 inches in all directions – both vertically and horizontally. Unless shown otherwise, all conduits shall be laid so that they maintain a minimum positive slope of 2" per 100 feet sloping toward the handholes/ manholes. Conduits shall be kept clean of all water, concrete, dirt, or foreign substances during and after installation. Where conduits have to be cut in the field, they shall be cut square using a proper pipe cutting tool. Field cuts shall be reamed to remove burrs and sharp edges and they shall be redone to match factory tapers or threads. Ducts shall be cleaned prior to installation. A pull cord shall be installed in each conduit.
- 3.7 GRS Conduits: GRS conduits shall be free of defects upon installation; any marring of the galvanizing surfaces during installation shall be repaired with three coats of a zinc-rich paint. Field cut threads shall have the same effective length, thread dimensions and taper as specified for factory cut threads. Conduit with threads not complying with factory specifications shall not be installed. Clean threads of all oil and shavings and apply three coats of a zinc rich paint to the damaged galvanizing. All conduits shall be provided with an insulated, grounding bushing and double locknut wherever the conduits terminate in a vault or junction box. Grounding bushing shall be OZ/Gedney #HSBLG or equal. Underground conduits shall be field wrapped with 0.010 inch pipe wrapping plastic tape applied coating with minimum thickness as follows: a) Low or medium density plastic – 0.020 inch; b) Epoxy resin – 0.0008 inch or c) Coal-tar enamel – 0.063 inch.
- 3.8 Bedding for GRS Conduits: GRS conduits shall be encased in 11 ½ inches of bedding material. There shall be a minimum 3" bottom cover and a minimum 3" top cover.
- 3.9 PVC Conduits: All PVC conduit joints shall be properly cemented in accordance with the manufacturer's recommendations and these specifications. PVC conduits shall be stored

on a flat surface and protected from direct sunlight. PVC conduits shall be provided with end bells wherever the conduits terminate in a vault.

- 3.10 Concrete Encasement for PVC Conduits: Concrete encasement shall be by monolithic construction. All spacers shall be non-metallic and placed at a maximum of 5 feet on center along the centerline of the trench. Conduits shall be properly spaced and securely anchored to prevent displacement during the concrete placement. The contractor is responsible for dewatering and maintaining trenches. No concrete shall be placed in water or on a wet subgrade. The contractor shall provide a marker designating the top elevation of the concrete prior to placement. Vibration and concrete curing techniques (compounds, burlap, etc.) are not required. However, the contractor shall rod the concrete as necessary to assure full placement around conduits, rebar, etc. and provide a somewhat even surface, i.e. no peaks and valleys over 3 inches. Concrete shall be placed within 90 minutes after batching. The contractor shall provide a solid vertical support at the end of each concrete pour. This shall remain in place for 24 hours. The contractor shall not backfill over concrete within the first 24 hours or prior to the achievement of a 2000 psi concrete compression strength.
- 3.11 Backfill Ductbank Trench: Backfill ductbank trench with suitable, excavated backfill material (no stones larger than 4 inch diameter or organic material). If there are not sufficient quantities of suitable, excavated materials, the contractor shall import a clean, sand/gravel material from a CDOT source for finish backfill. Compact in 6 inch lifts; each lift to receive three passes with a hand compactor. Backfill to bottom of elevation of top course, i.e. topsoil or base/gravel surfacing. For graveled areas, the backfill over the ductbank or disturbed area shall match existing conditions, but in no case less than 4 inches of crushed aggregate surfacing over 6 inches of aggregate base course over suitable backfill.
- 3.12 Innerducts: The contractor shall install three, polyethylene 1 1/4" innerducts, each with a footage-marked pull tape, in every 4-inch conduit between handholes and/or vaults and the exterior shelter junction boxes. The three innerducts shall be installed simultaneously in each conduit. Inner ducts shall be orange, corrugated on both the inside and outside, and pre-lubricated. Inner ducts shall be sufficiently pliable to install in existing conduits. The pre-installed tape in each innerduct shall be tied at each termination, i.e. vault or junction box. Leave some slack. Inner ducts shall extend sufficiently into each vault and junction box to allow for contraction, i.e. approximately 3 inches in J-Box and one foot in vaults.
- 3.13 Warning Tape: A 3-inch minimum wide orange plastic warning tape, 6 mil minimum thickness, shall be continuously imprinted with the appropriate legend and shall be located as shown on the plans.
- 3.14 Grounding: A ground rod and #1/0 AWG ground conductor for each ductbank shall be installed and connected per drawing NMSD-D-MISC-C004 and specification 016670.

- 3.15 Crushed Rock Surfacing: Crushed rock surfacing shall be placed over 6 inches of compacted aggregate base course over ductbanks and excavations in gravel areas, and in all areas where the existing surfacing has been degraded by excavation and trenching activities. The following are the requirements for placing crushed rock surfacing:
- A. All debris and excess excavated materials shall be removed from the area before crushed rock surfacing is placed.
  - B. The site shall be graded so that it is uniform and matches pre-construction conditions. It shall then be compacted with at least two passes of vibratory roller compactor. Compaction around shelter foundations, structures and vaults shall be accomplished with hand operated compaction equipment.
  - C. Surfacing shall be uniformly spread across the designated area, thoroughly watered and compacted with at least three passes of a vibratory roller compactor. The compacted depth of the aggregate shall be 4 inches.
- 3.16 Finish Operations:
- A. Grading - Finish grades shall be uniform and smooth and free from irregular surface changes. Comply with requirements on the drawings and in these specifications.
  - B. Protection of Surfaces - Protect newly graded areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.
  - C. Disposition of Surplus Material - Remove and properly dispose off the site surplus or other soil material not required or suitable for filling or backfilling.
- 3.17 Name Plates: The contractor shall install name plates securely to each cast iron vault lid with two screws. Name plates are required on vaults: 133, 205, 214, 253, 255A, 262, 400, 401, 423 and 424.
- 3.18 Risers: Install risers as necessary to match grade on vaults: 102 (+/-2'), 103 (+/-2'), 202 (+/-1'), 250 (+/-1'), 249 (+/-1'), 255A (?), 254 (?), 257 (+/-1'), 305 (+/-2') and 353 (+/-3'). Contractor shall determine riser requirements in the field prior to ordering risers. The contractor shall excavate down and around existing vault as necessary to accomplish the work. Remove access lid and clean joint surfaces. The contractor shall install rubber gaskets meeting ASTM C-443 in all joints; connect the new risers to the vault per the manufacturer's installation requirement; re-install access lid; and provide a complete and watertight installation. In grassy areas, the cover elevations shall be set approximately 1" above with finish grade. In all other areas, the cover elevation shall be flush with the finish grade. Any lift holes shall be grouted up from both the inside and outside to assure a watertight seal. The exterior walls of the new risers shall be coated with an asphalt damp-proofing material and touched up after installation. After installation, backfill and compact around vault and re-grade area to conform to surrounding terrain.

\*\*\*END OF SECTION\*\*\*

## **SECTION 02930**

### **SEEDING**

#### **PART 1 GENERAL**

- 1.1 Description of the Work: This specification covers the requirements for soil preparation and placement of seed and fertilizer on all non-pavement/gravel areas disturbed in the process of the contract work. The contractor shall provide all labor, equipment and materials as necessary to comply with these specifications and to provide a complete and satisfactory product.

1.2 Submittals:

Seed – Vendor certified statements that each lot of seed has been tested by a recognized laboratory for seed testing within 6 months of date of delivery. This statement shall include: Name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed.

#### **PART 2 MATERIALS**

- 2.1 Fertilizer: Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing by weight 16 percent total nitrogen, 16 percent available phosphoric acid, 16 percent water-soluble potash and 6% sulfur. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

- A. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;
- B. A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or
- C. A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be spread at a rate and depth which is determined by the seeding contractor to allow proper vegetative growth and that meets the requirements of Federal Specification O-F-241 and applicable state laws.

- 2.2 Seed: The species and application rates of grass shall be those stipulated herein. Seed shall be furnished separately or in mixtures in standard containers with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and



percentage of maximum weed seed content clearly marked for each kind of seed. Purity and germination are defined as they are under Colorado Seed Law.

### Mix Design 2 – Non-saline Upland Seed Mix For Shoulder Areas

<u>Seed</u>	<u>Common Name</u>	<u>Variety</u>	<u>PLS lb/acre</u>	<u>Percent of Mix</u>
GRASSES				
Bouteloua curtipendula	Sideoats Grama	Vaughn	0.8	10
Bouteloua gracilis	Blue Grama	Bad River	0.05	2.5
Bouteloua gracilis	Blue Grama	Hachita	0.05	2.5
Bouteloua dactyloides	Buffalograss	Cody	0.7	2.5
Bouteloua dactyloides	Buffalograss	Native VNS	0.7	2.5
Distichlis spicata v. stricta	Inland Saltgrass	Native VNS	0.3	5
Elymus lanceolatus v. lanceolatus	Thickspike Wheatgrass	Critana	1.1	11
Elymus lanceolatus v. psammophilus	Streambank Wheatgrass	Sodar	1.0	10
Elymus trachycaulus	Slender Wheatgrass	Primar	0.5	5
Nasella viridula	Green Needlegrass	LoDorm	0.8	5
Pascopyrum smithii	Western Wheatgrass	Arriba	3.6	25
Poa secunda	Sandberg Bluegrass	Native VNS	0.5	5
Sporobolus cryptandrus	Sand Dropseed	Native VNS	0.01	4
Stipa comata	Needleandthread Grass	Native VNS	0.7	5
<b>GRASS SPECIES</b>			<b>10.8</b>	<b>100</b>

VNS = Variety Not Stated

\* PLS means Pure Live Seed; rates shown are for drill seeding, if broadcast, rates should be doubled.

\*\* Percent by seed number

Seeding shall be accomplished by drill seeding or by broadcast seeding.

If drill seeding is used, the seed drill will be equipped with three seed boxes including one for large smooth seed, one for fluffy seed (with picker wheels to prevent bridging), and one for small smooth seed. Furrow spacing may vary between 7 and 9 inches. Drill will have double disc furrow openers and functioning depth bands set to plant at ½ inch depth. Drill will have either packer wheels or drag chains. Grain drills are NOT acceptable. Seeder-cultipackers are also not acceptable.

If broadcast seeding is used, soil surface will be roughened IMMEDIATELY prior to seeding using a toothed-type harrow. Seed will be spread by hand or by cyclonic spreader at a rate TWICE that specified for drill seeding in the seed table. Immediately following seeding, the treated area will be harrowed with a tooth-type harrow to cover the seed. Sufficient passes will be made to assure that seed is covered to a depth of at least ¼ inch. Brush or chain-link drags are not acceptable for this purpose.

- 2.2 Soil for Repairs: The soil for fill and top soiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be free of large stones, roots, stumps or other materials that interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the COTR before being placed.

### **PART 3 EXECUTION**

- 3.1 Seeding and Restoration of Disturbed, Off-pavement/gravel Areas: The contractor shall stabilize all disturbed non-pavement/gravel areas with the placement of topsoil, fertilizer and seed. The contractor must coordinate with the Denver International Airport just prior to seeding and obtain approval of the grading.
- 3.2 Advance Preparation and Cleanup: After grading of areas has been completed and before applying fertilizer, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

The area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches as a result of grading operations and, if immediately prior to seeding, the top 3 inches of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

- 3.3 Maintenance of Seeded Areas: The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the Port. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The contractor shall mow, water and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work. It will be required that the contractor establish a good stand of grass with uniform cover to the satisfaction of the COTR. A grass stand shall be considered adequate when after the first growing season, there are as average of at least three (3) seedlings of desirable (planted) species per square foot.

**\*\*\*END OF SECTION\*\*\***

## SECTION 16136

### **GRS CONDUITS, ENTRIES AND JUNCTION BOXES**

#### **PART 1 GENERAL.**

- 1.1 Scope: This specification covers the equipment and installation requirements for the GRS conduits, entries and junction boxes at two FAA facility sites. The Contractor shall provide all labor, equipment, and materials as specified herein and in the site drawings. Installation shall also comply with the requirements on standard drawings: NMSD-D-MISC-C005, Coaxial Cable Junction Boxes at Communication Facility Shelters, and NMSD-D-MISC-C009, Wall Penetration and Cable Tray Detail.
- 1.2 Specific Items of Work:
- A. Installation of one 30"x 36"x 10" fiberglass, NEMA 4 communication junction box on the exterior wall of the each of the following: 1) 16L Localizer shelter and 2) 34R Localizer shelter.
  - B. Installation of two (2) 4" diameter GRS sweeps and conduits from the concrete encased ductbank to each of the two new building junction boxes.
  - C. Installation of one 4" GRS conduit, one LB and one 4" diameter building entry above each of the two new building junction boxes.
  - D. Installation of one 1" PVC conduit from each J-box for grounding conductor.
- 1.3 Applicable Publications: The following specifications and standards form a part of this section and are applicable as they apply to this specification. The latest issue of the publications shall be used.

#### Federal Specifications

WW-C-581                      Galvanized Steel Conduit

#### National Fire Protection Association (NFPA) Publication

NFPA 70                      National Electrical Code

#### FAA Specifications & Standards

FAA-C-1217f                  Electrical work Interior

FAA-STD-019c                Lightning Protection, Grounding, Bonding and Shielding  
Requirements for Facilities

#### Under Writers Laboratories (UL)

UL 6                          Rigid Metal Conduit

#### National Electrical Manufacturers Association (NEMA)

NEMA 250-2003                Enclosures for Electrical Equipment

NEMA OS-1                      Sheet Steel Outlet Boxes, Device Boxes, Covers and Box Supports

1.4 Submittals: The Contractor shall submit the following information:

- A. Communication junction boxes – product data sheet
- B. Support Channels – product data sheet.
- C. GRS Conduits, sleeves, sweeps and fittings – product data sheet
- D. LB w/ gasketed cover – product data sheet
- E. GRS bedding material – gradation test report and supplier
- F. PVC conduits for grounding conductors – product data sheet

## **PART 2 MATERIALS:**

- 2.1 Contractor Supplied Materials: The Contractor shall supply all the necessary materials and hardware required to install GRS conduits, entries and junction boxes described in this specification. Items not specifically mentioned in this specification, but necessary to complete the installation, shall be furnished without additional fee. These items include Unistrut supports, nuts and bolts, and other miscellaneous hardware. Unistrut supports used outside the equipment shelter shall be galvanized or stainless steel as well as the nuts, bolts and other hardware. All materials shall be UL listed.
- 2.2 Communication Junction Boxes: Shelter mounted junction boxes shall be made of fiberglass, meet NEMA 4 requirements and have the following details:
- A. Continuous hinge door w/ gasket.
  - B. Metal hasp and staple provided for padlocking
  - C. Collar studs and back panel
  - D. All hardware and hinge pins shall be stainless steel
- 2.3 Conduit: Conduit shall be 4" GRS conduit for cables and entries and Schedule 40 PVC for grounds.
- A. Galvanized Rigid Steel Conduit - Rigid steel conduit shall conform to the requirements of Federal Specification WW-C-581. Rigid steel conduit shall be provided with insulated throat, grounding bushings at all connections to junction boxes.
  - B. Rigid Nonmetallic Conduit – Rigid nonmetallic conduit shall conform to UL 651 and/or NEMA TC2 or TC6 (Type DB). Sizes shall be as shown on the drawings.
- 2.4 GRS Pipe Bedding Material: GRS pipe bedding material shall consist of clean sand with 100% passing the 3/4" sieve opening. Material shall not contain clays or organic material.

## **PART 3 EXECUTION:**

- 3.1 General: The rules, regulations and reference specifications enumerated in section shall be considered as minimum requirements. FAA requirements often exceed those of other

Standards organizations such as NEC. Adherence to other standards shall not relieve the Contractor from furnishing and installing higher grades of materials and workmanship when so required by this specification.

3.2 Workmanship: All materials and equipment shall be installed in accordance with the contract drawings. Conduit and boxes shall be installed so that vertical surfaces are plumb and horizontal surfaces are level. The installation shall be accomplished by qualified workers regularly engaged in this type of work. Where required by local regulations, the workers shall be properly licensed.

3.3 Galvanized rigid Steel (GRS): All GRS conduit shall comply with the following installation requirements:

- A. Underground installations shall be field wrapped with 0.010 inch pipe wrapping plastic tape applied in the following thickness:

Low density or medium density plastic	0.020 inch
Epoxy resin	0.008 inch
Coal tar enamel	0.063 inch
- B. Place and compact a minimum of 3" of bedding material at the location for the GRS sweeps. Connect the GRS sweeps to the PVC conduits from communication ductbank. See specification 02684. Place and compact bedding material around GRS conduits up to base/ surfacing course.
- C. Terminate with a grounding type insulated bushing and double locknut at all underground connections and at all cabinets and boxes. Bushing shall be OZ/ Gedney Type BLG or equal.
- D. GRS conduit shall be used for conduit risers from trenches and outside above ground installations.
- E. All connections shall be made with threaded connectors. Field cut threads shall match factory threads perfectly.
- F. All field threads and any damaged galvanized surfaces shall be treated with three coats of a zinc rich paint.
- G. GRS shall be shop bent to meet installation requirements.

3.4 Schedule 40 PVC Conduits: One (1) 1" schedule 40 PVC conduit shall be connected to each building junction box and extended to one foot below grade. PVC conduits shall be used for grounding conductors only.

3.5 Supports: Electrical boxes, conduits and raceways shall be securely fastened to wood with wood screws, carriage bolts and lag screws. Bolts and expansion shields shall be used on masonry and brick and machine screws or welded studs on steel work. Support systems shall be capable of carrying at least 1-1/2 times the weight of the supported system. Conduit shall be supported with straps designed to support conduit at intervals not exceeding 3 feet.



3.6 Installation of Shelter Mounted Junction Boxes: Junction boxes shall be installed so that the top of the junction box is six (6) feet above grade. They shall be securely mounted to the outside shelter wall using Unistrut channels and anchor bolts as follows:

- A. Junction boxes shall be carefully laid out so that wall penetration is centered directly over the box and the risers from the ductbank are vertical into the bottom of the box.
- B. Junction boxes and conduits shall be carefully laid out so that the communication conduits entering the box are centered and spaced apart with a 3-inch clearance, unless shown otherwise on the drawings.
- C. Unistrut supports shall be mounted against exterior siding, one near the top of the box and another near the bottom, and in such a manner that the box will be vertical and plumb. The anchors for the Unistrut supports shall go through the siding and be securely fastened into the building wall. The contractor shall install neoprene washers between the supports and exterior siding.
- D. Unistrut and all exterior hardware shall be galvanized or stainless steel. Rubber or neoprene washers shall be used on all connections to buildings and boxes.
- E. Anchor bolts used shall be suited for use with the wall material.
- F. Holes in the wall for anchor bolts shall be sealed with caulk.

3.7 Outdoor Conduit and Wall Penetrations: Conduit exposed on the outside wall of the shelter shall be rigid steel galvanized. The following are installation requirements:

- A. Conduit must be secured to the building at 3 foot intervals with conduit straps.
- B. Threaded couplers at the junction box shall be watertight, fitted with neoprene washers.
- C. LB conduit body and 4" GRS nipple shall be installed at the wall penetration.
- D. The shelter wall must be penetrated at the location on the drawings and with extreme care not to damage the surrounding wall structure or create dust inside the facility. The area around the wall penetration shall be encapsulated with plastic sheathing during drilling operations to prevent dust from getting into the electronic equipment inside the shelter.
- E. The hole through the shelter wall shall closely match the outside diameter of a 4" rigid steel galvanized nipple. The area around the nipple shall be sealed with Sikaflex acrylic caulk or equal. The inside of the conduit nipple shall be sealed with duct seal.

**\*\*\*END OF SECTION\*\*\***

## SECTION 16181

### CABLE INSTALLATION

#### PART 1 GENERAL

1.1 Description of the Work: This specification covers the installation of innerduct, pull tape, fiber optic cables, supports and labels. The contractor shall provide all labor, materials and equipment as necessary to comply with these specifications and to provide a satisfactory and complete installation. Refer to drawings DEN-D-ALD-C030 through C034 for manhole locations and distances. The contractor shall install new innerduct/ cable within an existing innerduct/ conduit as identified in the field by the Contracting Officer's Technical Representative (COTR). NOTE: Distances and quantities provided in this specification represent the best information available and may not be exact. The contractor shall provide for minor variations (+/-10%) in his/her bid. Variations over 10% will be handled as a change order. The contractor shall report any major discrepancies to the Contracting Officer's Technical Representative.

1.2 Summary of Work Items:

1. Submittals - Installation plans, schedules and product data sheets.
2. Initial OTDR cable tests. 7 reels.
3. Preparation of vaults for confined space entry and for cable installation.
4. Dewatering of approximately 85 vaults as necessary for the work.
5. Cleanout and ventilate 23 vaults.
6. Removal of existing, abandoned fiber cable in designated 4" conduit between vaults 206 and 207. Clean out conduit of all mud and debris with a commercial pressure washer and then inspect afterwards with a camera. Dewater and cleanout vaults 206 and 207 after operation.
7. Replacement of approximately 86,536 feet of existing pull ropes with mule tape. Estimated breakdown was 17,000 feet on Eastside; 21,410 feet on Westside; 8,632 feet on Southside; and 39,494 feet ATCT-TRACON.
8. Installation of three 1 1/4" diameter innerducts each with mule tape in one 4" conduit at specified locations. Total estimated amount of 1 1/4" innerduct required was 80,578 feet. Breakdown was estimated as 18,100 feet on Eastside and 62,478 feet on Westside.
9. Installation of one 1 1/4" innerduct with mule tape in one conduit of length 50 feet.
10. Installation of one to two 1" innerducts each with mule tape in 2" conduits. Estimated amount of 1" innerduct required was 412 feet.
11. Installation of two 1 1/4" riser rated innerducts with mule tape between vault 343 and the TRACON electronics room. Approximate length of riser rated, 1 1/4" innerduct was 300 feet.
12. Installation of sixty-seven (67) 12" cable support brackets each with one 3" saddle and lock in vaults as specified.
13. Installation of thirteen (13) 24" cable support brackets each with 11" arm and lock in vaults as specified.

14. Installation of seven (7) 36" cable support brackets and fourteen (14) 3" saddles with locks in vaults as specified.
15. Installation of sixteen (16) 36" cable support brackets each with 11" arm and lock in vaults as specified.
16. Installation of indoor/outdoor, double jacketed 36 SM fiber optics cable. Estimated breakdown is as follows: 28,158 feet Eastside; 48,867 feet Westside; and 10,356 feet Southside.
17. Installation of indoor/outdoor, double jacketed 96 SM fiber optic cables in two paths between the ATCT and TRACON. Estimated breakdown is as follows: East Path 22,939 feet and West Path 21,555 feet.
18. Installation of approximately 3,741 feet of outdoor 36 SM fiber optic cable between 17R GS and RCF A.
19. Installation of government furnished cable labels – two per cable per vault and one per cable per termini. (approximately 231 required)
20. Return of re-usable excess materials to FAA, disposal of trash and cleanup.
21. Final Cable Tests with OTDR.

### 1.3 Detailed Description

#### A) EASTSIDE: ATCT-26LOC, ATCT- RCF B & ATCT-35L LOC: I/O 36 SM CABLE

1. Dewater vaults as necessary for the work. Cleanout and ventilation vaults 105, 106, 206 and 209.
2. Innerduct: Install three 1 1/4" innerducts w/preinstalled mule tape in an empty 4" conduit between the following vaults: 102 & 103, 103& 104, 104& 138 and 138 & 139. Install one 1 1/4" innerduct with preinstalled mule tape between vault 105 and the handhole at the 35L LOC shelter. Approximate length of 1 1/4" innerduct required is 16,100 feet.
3. 12" Support Brackets: Install one 12" stanchion, one 3" saddle and lock in each of the following vaults: 106, 106a, 133, 134, 135, 136, 137, 138, 139, 202 and 203.
4. 36" Support Brackets: Install one 36" stanchion with two 3" saddles and locks in each of the following vaults: 102, 103, 104 and 105. Install two 36" stanchions each with one 11" arm and locks in vault 201. Install four 36" stanchions each with 11" arm and lock in vault 101.
5. Mule Tape: In each existing innerduct identified for a new cable, the contractor shall replace the existing pull rope with mule tape. Total combined distance is approximately 17,000 feet.
6. The contractor shall record distances between each access point, i.e. vault, handhole, building or room entry. Recorded distances shall be provided to the COTR.
7. Cable Installation: Install one continuous length (no splices) of government furnished, indoor/outdoor 36 SM fiber optics cable in the existing FAA ductbank to and between the following facilities:
  - a. ATCT to 26 LOC: Install one continuous run of indoor/outdoor, 36 SM fiber optics cable from vault #101 to inside the 26 LOC shelter. The total distance

is approximately 8,077 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 10,898 feet. Coil 100 feet inside the 26 LOC shelter. Provide service loops of 200 feet each in vault #102 and vault #135, and of 100 feet in vault #133. Provide two (2) loops of 1,063 feet each in vault #101. Install 17 cable labels "FAA 36 SM Fiber, ATCT to 26 LOC".

- b. ATCT to RCF B: Install one continuous run of indoor/outdoor, 36 SM fiber optics cable from vault #210 to inside the RCF B building. The total distance is approximately 7,043 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 10,263 feet. Coil 200 feet inside the RCF B building. Provide service loops of 150 feet each in vaults #139, #104 and #203. Provide two (2) loops of 1,288 feet each in vault #201. Install 19 cable labels "FAA 36 SM Fiber, 25 ATCT to RCF B".
- c. ATCT to 35L LOC: Install one continuous run of indoor/outdoor, 36 SM fiber optics cable from vault #101 to inside the 35L LOC shelter. The total distance is approximately 4,497 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 6,997 feet. Coil 100 feet inside the 35L LOC shelter. Provide service loops of 150 feet each in vaults #103 and #104. Provide two (2) loops of 1,013 each in vault #101. Install 11 cable labels "FAA 36 SM Fiber, ATCT to 35L LOC".

B) WESTSIDE: ATCT-35R LOC, ATCT-16L LOC & ATCT - ASR: I/O 36 SM CABLE

1. Dewater vaults as necessary for the work. Cleanout and ventilation vaults 301,302, 304, 304a, 305, 313, 357, 401, 402, 424 and 427.
2. Innerduct: Install three 1 1/4" innerducts each with preinstalled mule tape in an empty 4" conduit in the 34R LOC ductbank run starting at vault 419, proceeding through vaults 420, 421, 422, 423, 424, 425 and 427, and ending at vault 402. Approximate length of 1 1/4" innerduct required is 46,200 feet.
3. Innerduct: Install three 1 1/4" innerducts each with preinstalled mule tape in an empty 4" conduit in the ASR/16L LOC – ATCT ductbank run through the following vaults: 357 & 304a, 304a & 305, 305 & 313, 303 & 403 and 317 & ASR building. Install one 1 1/4" innerduct with mule tape between 303 & 304. Total length of 1 1/4" innerduct required is approximately 16,300 feet.
4. 12" Support Brackets: Install one 12" stanchion, one 3" saddle and lock in each of the following vaults: 302, 303, 305, 310, 311, 312, 313, 314, 315, 316, 317, 357, 403, 419, 420, 421, 422, 423, 424, 425 and 427.
5. 36" Support Brackets: Install one 36" stanchion with two 3" saddles and locks in each of the following vaults: 304, 304a and 402. Install two 36" stanchions each with 11" arm and lock in vault #301. Install four 36" stanchions each with 11" arm and lock in vault # 401.

6. Mule Tape: In each existing innerduct identified for a new cable, the contractor shall replace the existing pull rope with mule tape. Total combined distance is approximately 21,410 feet.
7. The contractor shall record distances between each access point, i.e. vault, handhole, building or room entry. Recorded distances shall be provided to the COTR.
8. Cable Installation: Install one continuous length (no splices) of government furnished, indoor/outdoor 36 SM fiber optics cable in the existing FAA ductbank to and between the following facilities:
  - a. ATCT to 34R LOC: Install one continuous run of indoor/outdoor, 36 SM fiber optics cable from vault #401 to inside the 34R LOC shelter. The total distance is approximately 16,503 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 19,728 feet. Coil 100 feet inside the 34R LOC shelter. Provide service loops of 300 feet each in vaults #420, #423 and #402. Provide two (2) loops of 1,050 feet each in vault #401. Install 21 cable labels "FAA 36 SM Fiber, ATCT to 34R LOC".
  - b. ATCT to 16L LOC: Install one continuous run of indoor/outdoor, 36 SM fiber optics cable from vault #301 to inside the 16L LOC shelter. The total distance is approximately 4,484 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 7,417 feet. Coil 100 feet inside the 16L LOC shelter. Provide service loops of 150 feet each in vaults #302 and #304. Provide two (2) loops of 1,200 feet each in vault #301. Install 11 cable labels "FAA 36 SM Fiber, 25 ATCT to 16L LOC".
  - c. ATCT to ASR: Install one continuous run of indoor/outdoor, 36 SM fiber optics cable from Vault #401 to inside the ASR building. The total distance is approximately 18,150 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 21,722 feet. Coil 200 feet inside the ASR building. Provide service loops of 200 feet each in vaults #303, #305, #310, #316 and #402. Provide two (2) loops of 1,063 each in vault #401. Install 31 cable labels "FAA 36 SM Fiber, ATCT to ASR".

C) SOUTHSIDE: TRACON to RCF C & TRACON to 17R LOC: I/O 36 SM CABLE

1. Dewater vaults as necessary for the work. Cleanout and ventilation vault 343. Note: caution required when entering vault #253 as ladder is 40" below grade.
2. 12" Support Brackets: Install one 12" stanchion, one 3" saddle and lock in each of the following vaults: 225, 225A, 249, 249A, 250, 252, 253, 254, 255, 340, 340A, 343east, 343 west and 344.
3. Mule Tape: In each existing innerduct identified for a new cable, the contractor shall replace the existing pull rope with mule tape. The contractor shall record distances



between each access point, i.e. vault, handhole, building or room entry. Recorded distances shall be provided to the COTR. Total combined distance is approximately 8,632 feet.

4. Cable Installation: Install one continuous length (no splices) of government furnished, indoor/outdoor 36 SM fiber optics cable in the existing FAA ductbank to and between the following facilities:
  - a. TRACON to RCF C: Install one continuous run of indoor/outdoor, 36 SM fiber optics cable from the electronics room inside the TRACON building to inside the RCF C building. The total distance is approximately 2,810 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 3,651 feet. Coil 300 feet of cable inside the TRAOCN building equipment room and 200 feet inside the RCF C building. Provide service loops of 100 feet each in vaults #249 and #341. Install 17 cable labels "FAA 36 SM Fiber, TRACON to RCF C".
  - b. TRACON to 17R LOC: Install one continuous run of indoor/outdoor, 36 SM fiber optics cable from the electronics room inside the TRACON building to inside the 17R LOC shelter. The total distance is approximately 5,822 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 6,705 feet. Coil 300 feet of cable inside the TRAOCN equipment room and 100 feet inside the 17R LOC shelter. Provide service loops of 150 feet each in vaults #254 and 249A. Install 19 cable labels "FAA 36 SM Fiber, TRACON to 17R LOC".

D) ATCT to TRACON: TWO PATHS OF ONE INDOOR/OUTDOOR, 96 SM CABLE:

1. Dewater vaults as necessary for the work. Cleanout and ventilation vaults 256, 343, 353, 354, 355, 355a and 356.
2. Innerduct: Install two 1" innerducts in an empty 2" conduit between vaults 344 and 343 east. Install one 1" innerduct in 2" conduit between vaults 342 and 343 west. Install two 1 1/4" riser rated innerducts between vault 343 and the TRACON electronics room. Approximate required length of 1" innerduct with mule tape is 412 feet. Approximate length for 1 1/4" riser rated is 300 feet.
3. 36" Support Brackets: Install one 36" stanchion with 11" arm and lock in each of the following vaults: #101, #201, #301 and #401.
4. 24" Support Brackets: Install one 24" stanchion with 11" arm and lock in vaults 202, 249A, 254, 257, 261, 346, 302, 342, 349A, 343 east, 343 west, 352 and 354.
5. 12" Support Brackets: Install one 12" stanchion, one 3" saddle and lock in each of the following vaults: 253, 255, 256, 158, 260, 262, 344, 345, 347, 348, 349, 353, 355, 355A, 356 and 357.
6. Mule Tape: In each existing innerduct identified for a new cable, the contractor shall replace the existing pull rope with mule tape. The contractor shall record distances between each access point, i.e. vault, handhole, building or room entry. Recorded

distances shall be provided to the COTR. Total combined distance is approximately 39,494 feet.

7. Cable Installation: Install one continuous length (no splices) of government furnished, indoor/outdoor 96 SM fiber optics cable in the existing FAA ductbank to and between the following facilities:
  - a. ATCT to TRACON (Eastside): Install one continuous run of indoor/outdoor, 96 SM fiber optics cable from vault #101 to the electronics room in the TRACON. The total distance is approximately 19,399 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 22,939 feet. Coil 300 feet of cable inside the electronics room of the TRACON. Provide service loops of 200 feet each in vaults #202, #261, #257, #254 and vault #253. Provide a 1,063 foot loop in each of vaults #101 and #201. Install 34 cable labels "FAA 96 SM Fiber, ATCT to TRACON".
  - b. ATCT to TRAOCN (Westside): Install one continuous run of indoor/outdoor, 96 SM fiber optics cable from vault #401 to the electronics room inside the TRACON. The total distance is approximately 18,380 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 21,555 feet. Coil 300 feet of cable inside the electronic room of the TRACON. Provide service loops of 150 feet each in vaults #342, #346, #349A, #352, #354 and #302. Provide 1,140 foot loop in each of vaults #301 and #401. Install 38 cable labels "FAA 96 SM Fiber, ATCT to TRACON".

#### E) RCF A to 17R GLIDE SLOPE: ONE PATH OUTDOOR 36 SM CABLE

1. Dewater vaults as necessary for the work.
2. Remove existing, abandoned fiber cable in designated 4" conduit between vaults 206 and 207. Clean out conduit of all mud and debris with a commercial pressure washer and then inspect afterwards with a camera. Dewater and cleanout vaults 206 and 207 after operation.
3. Innerduct: Install three 1 1/4" innerducts each with mule tape in an empty 4" conduit between vaults 206 and 207. Approximate length of innerduct required is 2,000 feet.
4. 12" Support Brackets: Install one 12" stanchion, one 3" saddle and lock in vaults 205, 206, 207, 207A and 209.
5. Cable Installation: Install one continuous length (no splices) of government furnished, outdoor 36 SM fiber optics cable in the existing FAA ductbank from the 17R Glide Slope shelter to the RCF A building. The approximate distance is 3,815 feet. The total length of cable to be installed including coils at the end facilities and service loops is approximately 3,741 feet. Coil 300 feet of cable inside the RCF A building and 100 feet inside the 17R GS shelter. Provide service loops of 50 feet each in vaults 205 and 209; provide service loop of 100 feet in vault 207. Install 13 cable labels "FAA 36 SM Fiber, 17R GS to RCF A".

### 1.3 References:

- A. NFPA 70 - National Electrical Code.
- B. FAA C-1391b – Installation and Splicing of Underground Cables
- C. TC2 Electric Plastic Tubing (EPT), Conduit (EPC-40) & Fittings
- D. TC6 PVC and ABS Plastic Utilities Duct for Underground Installation

### 1.4 Submittals:

- A. Cable Installation Plan and Schedule – include description of cable installation equipment and materials, calibration certificates, description of work vehicles, procedures for confined space entry, daily starting and stopping locations, cable pull-out locations and protection plan for exposed cables.
- B. OTDR calibration certificate.
- C. Innerducts – product data sheet.
- D. Mule Tapes – product data sheet.
- E. Cable support brackets, 3” saddles, 11” arms, locks, inserts & hardware – product data sheets.
- F. Commercial Utility Company –Information and background on company hired to clean out clogged conduits.
- G. Fiber Cable Installation Crew: For every worker to be assigned to this task, provide name with detailed description of airport experiences, fiber cable installation experiences and pertinent certifications.
- H. Cable Test Reports – pre and post-installation

## **PART 2 MATERIALS**

2.1 General: The government will furnish the SM fiber optics cable and the cable labels. The contractor shall furnish the innerduct; support brackets, saddles, arms and hardware; mule tape; pulling materials, safety equipment, zip ties and all other materials as needed for a satisfactory installation.

2.2 Indoor, Outdoor 96 SM Fiber Optics Cable: This cable will be furnished by the government. It will be a loose tube, all-dielectric, gel-free cable with 96 single mode strands. Maximum attenuation (dB/km) shall be 0.4/0.4/0.3. It is double jacketed with a diameter of 0.66 inches; minimum bend radius of 13.2 inches; and weight of 169 pounds per 1000 feet. Cable plus reel weighs roughly 5,242 pounds. Cable will be provided with a 10% minimum error factor and in two reels of lengths 27,000 feet and 28,000 feet for the following:

ATCT – TRACON: Indoor/Outdoor 96 SM Fiber Cable  
ATCT –TRACON (East): 22,939(1.1) = 25,233 ft  
ATCT-TRACON (west): 21,555(1.1) = 23,711 ft

2.3 Indoor/ Outdoor 36 SM Fiber Optics Cable: This cable will be furnished by the government. It will be a loose tube, all-dielectric, gel-free cable with 36 single mode strands. Maximum attenuation (dB/km) shall be 0.4/0.4/0.3. It is double jacketed with a diameter of 0.54 inches; minimum bend radius of 10.8 inches; and weight of 118 pounds per 1000 feet. Cable reel weighs roughly 500 pounds and measures approximately 6 feet in diameter and 5 feet in width. Cable plus reel could weigh roughly 4,012 pounds. Cable will be provided with a 10% minimum error factor and in four reels of lengths 12,000 feet, 24,000 feet, 30,000 feet and 34,000 feet for the following:

- a. Eastside: Indoor/ Outdoor 36 SM Fiber Cable (34,000 ft reel)
  - 26 LOC - ATCT:  $10,898 (1.1) = 11,988$  ft.
  - RCF B - ATCT:  $10,263 (1.1) = 11,290$  ft.
  - 35L LOC -ATCT:  $6,997(1.1) = 7,697$  ft.
- b. Westside: Indoor/ Outdoor 36 SM Fiber Cable (24,000 & 30,000 ft reels)
  - 34RLOC-ATCT:  $19,728 (1.1) = 21,701$  ft. (partial 30,000 ft reel)
  - 16LLOC-ATCT:  $7,417 (1.1) = 8,159$  ft (partial 30,000 ft reel)
  - ASR – ATCT:  $21,722 (1.1) = 23,895$  ft (24,000 reel)
- c. Southside: Indoor/Outdoor 36 SM Fiber Cable (12,000 reel)
  - 17R LOC-TRACON:  $6,705(1.1) = 7,376$  ft
  - RCF C - TRACON:  $3,651(1.1) = 4,016$  ft

2.4 Outdoor Only 36 SM Fiber Optics Cable: This cable will be furnished by the government. It will be a loose tube, all-dielectric, gel-free cable with 36 single mode strands. Maximum attenuation (dB/km) shall be 0.4/0.4/0.3. It is single jacketed with a diameter slightly less than ½ inch; minimum bend radius of 6.8 inches; and weight of 67 pounds per 1000 feet. Cable reel weighs roughly 500 pounds and measures approximately 6 feet in diameter and 5 feet in width. Cable will be provided as 1 reel of approximately 5,248 feet for the following:

Eastside: Outdoor Only 36 SM Fiber Cable  
17R GS - RCF A:  $3,741 (1.1) = 4,115$  feet

2.5 Cable pulling compound shall be used to pull cables through conduit. Petroleum grease or soap shall NOT be used.

2.6 General Purpose Innerduct: Innerduct shall be orange corrugated, polyethylene tubing of the nominal diameter specified (mostly 1 ¼"; some 1") in compliance with ASTM D3350 and with pre-installed, pre-lubricated, woven polyester tape with footage markings. Tape shall be a minimum of 1250 lb. strength for the 36 SM cable and a minimum of 1800 lb strength for the 96 SM cable.

2.7 Riser Rated Innerduct: Innerduct shall be riser rated and marked with a UL listing for UL 2024. It shall be orange corrugated, PVC tubing of 1 ¼" nominal diameter and with a pre-installed, pre-lubricated, woven polyester tape with footage markings. Tape shall be a

minimum of 1800 lb. strength. It shall be used as specified and at any location where the innerduct enters a facility.

- 2.8 Pull Tape: Pull tape shall consist of a flat, woven, polyester tape that is lubricated and is durably printed with footage markings. It shall have a minimum strength of 1250 pounds for the 36 SM cable, NEPTCO polyester mule tape #WP1250P or equal. It shall have a minimum strength of 1800 pounds for the 96 SM cable, NEPTCO polyester mule tape #WP1800P or equal.
- 2.9 Cable Rack Mounting Hardware: ½ - 13 Drop-In, stainless steel anchor; stainless steel flat washer and ½-13 X1 3/8" long, stainless steel hex head cap screw. Ultimate pull out capacity of 8,544 pounds and ultimate sheer capacity of 6,502 pounds.
- 2.10 Cable Racks, Saddles, Arms and Locks: Cable racks (support brackets), 3" saddles and 11" arms shall be heavy duty, non-metallic and made of UL listed glass reinforced polymer. Racks (support brackets) shall be sized as specified and be Underground Devices #CR36-B, #CR24-B, #CR12-B or equal. Saddles shall be 3" with load rating of 450 pounds, Underground Devices #3HDS or equal. Arms shall be 11" with load rating of 400 pounds, Underground Devices # RA11 or equal. Locks shall be provided with each saddle or arm. Lock shall be Underground Devices HDL or equal.
- 2.11 Cable Labels: Cable labels are government furnished. They are 2"x 4" stainless steel plates with tow holes each. Labels are pre-marked with cable description.

### **PART 3 EXECUTION**

- 3.1 General: Prior to the cable installation, the contractor shall meet with the Contracting Officer's representative to review the contractor's submittal "Cable Installation Plan and Schedule", and examine the cable route and existing conditions. Pull points, temporary lay-down locations and overnight lay-down locations shall be identified and agreed upon. All lay-down areas must be outside of all runway / taxiway safety areas and vehicle traffic areas and be of sufficient size to safely accommodate the length of cable. The contractor shall coordinate with the COTR and the City of Denver, Airport Division, for any required runway closures and clearances prior to entering the airfield. Once the work has started, the contractor must continue with the cable installation without stoppage until the next approved, overnight lay-down location is reached, unless directed otherwise by the COTR.
- 3.2 Cable Protection: During the handling and installation, the contractor shall use whatever means necessary to protect the fiber optic cable from damage to the fibers, cladding and/or jacket. Since the intent of the work is to have continuous runs between facilities, any damage done to the cable during the handling and/or installation will result in replacement of the cable at the Contractor's expense. Splicing of the cable to remove damaged areas will not be allowed. Cables in the facilities shall be coiled up, secured with electrical tape and placed in a protected area.



- 3.3 Entering Vaults: Nearly all of manholes/ handholes at the Denver International Airport are large vaults. The inside length varies from 10'-6" to 12'-0" and the width from 5' to 6'. The depth is approximately 11 feet which consists of risers, top lid thickness and an inside height of 7 feet. See reference drawings NMD-000-40478-14 and NMD-000-40478-15. Entry into all vaults is under "permit-required conditions" regardless of its actual condition. All persons entering vaults and spotters must have completed training in Confined Space. The contractor shall have and utilize all required equipment for work in confined spaces. This includes sniffers, tripods, safety harnesses, hoists, air monitors, blowers, etc. Workers must also wear all required personal protection gear. The contractor shall test the air quality in each vault and assure it safe prior to allowing entrance. Thereafter, the air shall be monitored on a continual basis. The contractor shall record test results for each vault and provide copies to the COTR at the end of each work shift. Cones and/or barricades shall be placed around all open manholes/ handholes. The contractor shall comply with OSHA standards at all times.
- 3.4 Dewatering of Vaults: Prior to entering a vault, the contractor shall fully dewater it. The contractor shall dewater all vaults in ramp and pavement areas with a commercial vacuum truck that has a 2500 gallon or better tank and a pump that operates at 20 gallons per minute or better. This is necessary to reduce time delays to aircraft and vehicles. Clean water must be disposed of directly into a designated catch basin in pavement areas. In grassy areas, clean water can be pumped directly onto the adjacent ground; however, it must be dispersed in a manner that does not erode the ground or allow it to either drain back into the vault or interfere with air operations. Water containing glycol must be pumped into a tank and then deposited in a designated drain to the glycol pits or directly into the glycol pit at the airport. Water contained petroleum or fertilizer products must be pumped into a tank, transported off-airfield and deposited in an approved waste treatment plant. The contractor shall coordinate all water removal operations with the COTR; as well as comply with all rules and regulations of the City of Denver.
- 3.5 Cleaning of Vaults: For all vaults identified to be cleaned, the contractor shall fully dewater the vault; remove all foreign obstacles, i.e. mud, animals and any other debris; gently spray down the ceiling and walls of the vault while protecting the existing cables; and then vacuum out the cleaning water. All foreign obstacles removed from the vault shall be placed in a proper container and deposited in an approved landfill. Water shall be disposed of in accordance with specification 3.4 above. The contractor shall coordinate the cleaning operation with the COTR; as well as comply with all rules and regulations of the City of Denver.
- 3.6 Clearance of Conduits or Innerducts: The contractor shall verify that each conduit or innerduct to be use is open, continuous and clear of debris before installing innerducts or cable. If clogged, the contractor shall clear the duct with a rod. The contractor shall provide for an on-site rod of sufficient length for the contract runs.
- 3.7 Innerducts: The contractor shall install innerducts at the locations and in the number/ size specified in the detailed description of work, specification 1.3 above. Prior to each installation, the contractor shall contact the COTR and obtain the correct conduit to be

used in each vault for the placement of the innerducts. For the most part, this will be an empty conduit. The contractor shall remove any existing pull string and install mule tape in the designated conduit. The contractor shall then simultaneously pull in all required innerducts in the designated conduit with the mule tape. Protect other cables in the vault during the installation. Innerducts shall extend sufficiently into each vault to allow the creation of some slack in the mule tape by removing sections of innerduct and to allow for an end result of no less than 6 inches, but no more than one foot of innerduct extending beyond the conduit opening. The pre-installed mule tape in each innerduct shall be securely tied off at both terminations. Leave some slack. At four locations, there may be an existing fiber optics cable in the designated conduit. In this event, the contractor shall protect the existing fiber cable by securing it in place at each vault and then gently inserting the required innerduct. In the event that the innerduct becomes difficult to install or the existing fiber optics cable become taut or moves, the contractor shall stop and consult with the COTR before proceeding further.

- 3.8 Cable Racks, Saddles, Arm and Locks: Install vertically the number and size of stanchion(s) specified on a flat, plumb and vacant portion of the interior wall of each vault. Space multiple stanchions to accommodate cable loops. Mount on wall adjacent to the wall with the incoming conduits. Install one fastener in every elongated stanchion hole. Drill 5/8" dia. hole 2" deep and drive in stainless steel concrete anchor to 1/16" below surface. Expand anchor with setting tool. Install stainless steel flat washer and tighten the cap screw just enough to attain a snug fit. Install specified 3" saddle(s) or 11" arm in stanchion. If more than one saddle is specified for a stanchion, space saddles to accommodate two cable loops. Tap saddle or arm down to fully seat in stanchion. Install lock by placing it (with barbs up) into the rectangular hole in the stanchion just above the saddle or arm. Push lock until clicks into place.
- 3.9 Pull Tape Installation and Measurement Verifications: Install new mule tape by using the existing rope as a pull string. After installation, secure mule tape at each termination / vault. Leave ample slack. Properly dispose of old pull string after installation. From the footage distances on the tape, record the distance between vaults and verify accuracy against contract drawings and specifications. Prior to starting the cable installation, the contractor shall fully complete the installation of mule tape between each of the facilities in a designated cable run (example: ASR to ATCT) and verify the accuracy of the cable distance. Contractor shall account for cable lengths required for service loops; for mounting of the cable in vaults and for end loops at terminations. At the end of each work shift, provide recorded measurements to the COTR along with notification of any significant discrepancies prior to cable installation.
- 3.10 Cable Installation:
1. The contractor shall install the cable between destination points in one continuous run. Splices will not be allowed.
  2. Where more than one cable is to be installed in an innerduct, all cables shall be pulled at the same time.

3. All cable ends shall be sealed with moisture-sealing tape before pulling, and shall be left sealed and protected at all times. Seals that come loose shall be immediately replaced.
4. Use sufficient pulling lubricant to ensure that neither the cable nor the innerduct experiences wear which will compromise its protective integrity. Lubricant compound shall not deteriorate cable materials and shall be approved for use by the cable manufacturer.
5. Maximum pulling force shall be 400 pounds.
6. Use wheels, pulling sheaves and cable guides to maintain the cable bending radius. Do not, at any time, bend cables to radii smaller than 20 times the cable diameter.
7. Cable can be installed by either blowing it in or by pulling it. If using the pulling method, the cable shall be installed using a combination Kellums grip (swivel type) and a tension release "pulling eye" set to release at four hundred (400) pounds tension. The cable tensions shall be monitored at all times with calibrated dynamometer. The contractor shall prevent the jerking of cable by slowly starting the pull and by slowly increasing pull speeds. Cable subjected to tensions and/ or stressed greater than a pull force of 400 pounds shall be removed and replaced at the contractor's expense. Due to the length of the run, the contractor may use a center-pulling technique.
8. At designated pull out locations or wherever 90 degree bends are encountered, the cable shall be coiled into a figure "8" pattern outside of the handhole/ manhole prior to pulling the cable to the next vault or in the new direction. Protect the cable on the ground with barricades, cones, etc.
9. Do not force cable around sharp corners. Do not force or tug the cable during manual installations or wrap cable around hands or wrists during handling. Do not kink cable. Do not step on or drive on cable. Do not allow cable to rub against rough objects or over vault lid or conduit edges, etc.
10. The contractor shall provide service cable loops as described in Part 1.3 of this specification. Overall requirement is for a minimum 50-foot loop per each 1000 feet of ductbank. The cable must be coiled, supported on a cable rack and snugly (not tight) secured with zip ties. Cable shall be routed around the sides of the vault; it shall not cross over or be laid on the floor of the vault.
11. At each vault, the cable shall be routed along the side of the vault, placed in a 3" saddle or 11" arm on a cable rack and secured (not tight) with zip ties, and then routed along the side of the vault to the exit conduit. The cable shall not be routed across the floor of the handhole/ manhole.

- 3.4 Labels: Cable Labels: Tag new cable in vault with two tags per cable; the cable shall be tagged just after entry into the vault and just before it exits. Tag all cables in junction boxes or at building entries with one tag per cable. Tags shall be attached to the cable immediately after installation. Attach (not tight) each tag in 2 places with 1/8" nylon cord or zip ties. All labels will state:

FAA XX SM Fiber  
(beginning facility ID) – (ending facility ID)

## **PART 4      TESTING**

### **4.1      Testing by the Contractor:**

- A.      Testing: Cable tests using an Optical Time Domain Reflectometer (OTDR) shall be performed on the cable while it is still on the reel and again after installation. The Contractor shall test each fiber on each cable reel and each fiber on one end of each installed run. At the 1310nm wave length, each fiber shall not exhibit a loss of greater than 0.8db per kilometer or a perturbation greater than 0.10dB. All tests results shall be recorded. The test operator shall clearly identify any failures on the reports and sign each one. All OTDR reports shall be turned over to the Contracting Officer's Representative.
- B.      Testing Equipment: All testing and measuring devices used for this project shall be in proper calibration and working order. The Contractor shall provide written confirmation from a certified laboratory that the instruments have been tested and calibrated within a 9 months period prior to use on this project. The Contractor shall submit this information to the Contracting Officer's Representative prior to use of the test equipment or measuring devices.

**\*\*\*END OF SECTION\*\*\***

## SECTION 016670

### **LIGHTNING PROTECTION, BONDING & GROUNDING**

#### **PART 1 GENERAL**

- 1.1 General: The contractor shall provide all labor, equipment and materials as necessary to install lightning protection and grounding systems as specified on the drawings and in this specification. The contractor's work shall comply with all applicable sections of FAA-STD-019e, Lightning Protection, Grounding, Bonding and Shielding Requirements for Facilities. The major work items for this project are as follows:
1. Grounding of GRS conduits in new junction boxes.
  2. Grounding of communication duct bank at 16L Localizer site.
- 1.2 Applicable Documents: The following specifications and standards of the issues currently in force, form a part of this section, and are applicable as specified herein.
- 1.2.1 National Fire Protection Association (NFPA) Publications-  
NFPA 70 National Electrical Code  
NFPA 780 Standard for the Installation of Lightning Protection Systems
- 1.2.2 Underwriters' Laboratories  
UL 96A Installation requirements for Lightning Protection Systems
- 1.2.3 Federal Aviation Administration  
FAA STD 019e Lightning Protection, Grounding, Bonding and Shielding  
Requirements for Facilities
- 1.3 Submittals:
- 1.3.1 Grounding Conductors – product data sheets
  - 1.3.2 Ground Rods – product data sheet
  - 1.3.3 Insulated Grounding Bushings – product data sheets

#### **PART 2 MATERIALS**

- 2.0 Materials: All materials shall be new, the standards products of manufacturer's regularly engaged in the production of such materials, and of the manufacturer's latest designs that comply with those shown on the drawings and as specified herein. All lightning protection conductors and hardware shall carry the Underwriters' Laboratories, Inc. label or have factory certificates that the material complies with the Underwriters' Laboratories, Inc. No aluminum or other dissimilar materials shall be used.
- 2.1 Ground Rods: Ground rods shall be copper or copper clad steel, 3/4-inch diameter and a minimum length of 10 feet. Copper cladding shall be 1/64 inch minimum thick.



- 2.2 Grounding Conductors: The ductbank grounding conductor shall be a 1/0 AWG bare copper conductor. The grounding conductor for the GRS conduits shall be a #2 AWG with green colored insulation.
- 2.3 Insulated Grounding Bushings: Grounding bushings shall be threaded type, 4 inches in diameter and made of malleable iron or steel, zinc plated with stainless steel screws. It shall accommodate a 2AWG grounding conductor. O-Z/Gedney #BLG-4104 or equal.
- 2.4 Other Hardware: Fasteners shall be of the same materials as the conductor base material or copper in most cases. Fasteners shall not be made of aluminum, galvanized steel or plated materials. Bonding devices, cable splicers and connectors shall be suitable for use with the installed conductor and be copper or bronze with bolt pressure connections.

### **PART 3 EXECUTION**

- 3.0 Installation: The grounding system for the facility shall be as indicated on the contract drawings, as specified in FAA STD 19e, as required by the applicable documents and as specified herein. In the event of conflicting requirements, the most stringent shall apply.
- 3.1 Ground Rods: Install two ground rods at the 16L LOC site; one near vault #304 and one near the new shelter junction box. Install one ground rod near the new junction box on the 34R LOC shelter. Ground rods shall be installed with a 6-foot clearance from any shelter, vault or ductbank. Ground rods shall be driven full length into the earth so that the top is a minimum of 12 inches below finished grade.
- 3.2 Metal Conduits: Conduits shall be terminated with an insulated, grounding bushing – OZ / Gedney #BLG or equal, at all junction boxes and building entries.
- 3.3 Junction Boxes: Metal conduits in enclosures shall be interconnected with a single, #2 AWG grounding conductor which is then routed down the PVC conduit and out to the earth electrode system or ground rod. Exothermically weld the #2 conductor to the earth electrode system or ground rod.
- 3.4 Ductbanks: The contractor shall install a continuous 1/0 AWG bare copper conductor 10 inches above the concrete encased conduits between the vault #304 and the 16L LOC shelter. The 1/0 conductor shall be exothermically welded to the new ground rod located 6 feet away from the vault/ductbank on the vault end and to a ground rod or earth electrode system at the facility end.
- 3.5 Grounding Connections: Connections to ground electrodes and all other underground connections shall be with exothermic welds. No part of the underground cable or connections shall be concealed until the Contracting Officer's Representative has inspected, tested and approved the ground rods, conductors and connections.

**\* \* \* END OF SECTION \* \* \***